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# THE FRUIT & VEGETABLE CANNING, PRESERVING & DRYING INDUSTRIES

WITH SPECIAL REFERENCE TO CANADA

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# PREFACE

This brief report has been prepared in an endeavour to direct attention to the growing consumption of fruits and vegetables in their various preserved forms, and to the opportunities for the further development of these industries. For those who desire more specific or detailed information on any of the subjects which have been covered in a more or less general way, this Bureau has considerable unpublished data on file and will be glad to answer enquiries, if possible, or refer them to the proper officials.

Although most of the information in this report has been drawn from official sources, recourse has been made in some instances, where necessary, to unofficial data.

The National Development Bureau gratefully acknowledges the assistance of the Fruit Branch, Department of Agriculture and the Commercial Intelligence Service, Department of Trade and Commerce, in the preparation of this report.

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United Kingdom, Newfoundland, New Zealand, Irish Free State, Australia, Jamaica, South Africa, India, Hongkong, China, Japan, Netherlands East Indies, Argentine Republic, Brazil, Colombia, Cuba, Mexico, United States, Venezuela, France, Germany, Greece, Holland, Italy, Norway, Spain.
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Map

## 1 - CANNING AND PRESERVING

### GENERAL PRINCIPLES

The general principles involved in canning were discovered and promulgated by Appert more than a century ago. They involve the selection of a product when in prime condition, prompt preparation when once the product is gathered, extreme care in preparation, inclosure in a hermetically sealed container, and the application of heat in due degree to prevent any further change in composition. He did not use the term sterilization as that was unknown at the time. What has been done since is to confirm his work, to develop mechanical methods for the harvesting and much of the preparation of the products, to devise more suitable containers capable of being tightly sealed, and to determine processes which fulfilled the double function of properly preparing the food for consumption and at the same time rendering it sterile.

### GROWTH OF THE INDUSTRY IN CANADA

It is believed that the first canning factory was started in Grimsby, Ontario, in 1882 and this was followed in the next few years by plants at Picton, Aylmer, Delhi and Simcoe, all in the same province.

At first much of the work was done by hand. The cans were all made by hand and the men employed in the industry found work during the winter making stock for the next summer's operations. The farmers picked the pods of peas from the vines and delivered them to the factory in bags where they were shelled by hand.

Gradually more modern machinery and methods came into use and the industry developed rapidly. The number of canners grew so rapidly and competition became so keen that mergers were necessary, for the purpose of sanely and economically marketing their product. The first took place in 1903 when about 80 per cent of the canners entered

into an amalgamation known as the Canadian Canners Consolidated Company Ltd. This company, later known as the Dominion Canners Ltd., and finally as the Canadian Canners Ltd., has, by a series of mergers and purchases, succeeded in building up an organization which now controls the greater part of the Canadian trade. It operates over sixty canning and preserving plants in Ontario, three in Quebec and seven in British Columbia. Boxes, one of the chief commodities, are supplied by a subsidiary company. Seeds are grown and prepared for the growers who supply vegetables for canning. Machine shops are maintained for the manufacture of modern canning machinery and for making all necessary repairs. A laboratory and other testing and experimental departments are maintained.

The Associated Quality Canners Ltd., which is the result of a recent merger of 4 large independent concerns, operates, with affiliated companies, 14 plants in Ontario and 1 in Quebec. All seeds and plants are furnished to the growers by the company to ensure uniform pack, while cans are partly supplied by an affiliated can company.

Today there are 375 licensed plants engaged in the canning of fruits and vegetables, the manufacture of preserves, jams and jellies, or of pickles, sauces and relishes, as well as a number of unlicensed plants with their market limited to the province in which they operate. Possibly not more than half of these licensees may actually be considered as commercial canners in the real sense of the term. In the larger towns and cities licenses are frequently held by grocers and confectioners who put up preserves, marmalades, pickles and relishes in a small way, and in eastern Ontario, between Ottawa and Montreal, many farmers have obtained licenses and have apparently found it profitable to dispose of their fruit and vegetable products in the canned form.

## ADVANTAGES OF THE CANNED PRODUCT

### Nutritive Value

Canned foods are simply natural foods cooked and sterilized by heat, and the nutritive value is the same as, or greater than, that of corresponding raw food purchased in the open market and cooked in the kitchen. The nutritive value of canned peas or spinach, for example, is the same as that of fresh peas or spinach bought and cooked in the home. In the case of canned peaches, the nutritive value is the same as that of the fresh fruit if sliced and cooked in syrup. They have the same content of protein, fat, sugar, starch, etc.

### Other Advantages

Besides possessing the valuable nutritive properties of fresh foods, canned foods have certain advantages that appeal strongly to the consumer. They are already prepared and can be served either hot or cold without further cooking to make them palatable or digestible. They have been sorted, peeled or trimmed, as each may require, so that there is no waste. Their palatability and wholesomeness are increased by the fact that canneries are ordinarily located in the centres of districts where the products to be canned are grown. This means securing the raw material with the greatest possible promptness, with a minimum amount of handling and at the most satisfactory stage of maturity or ripeness.

The advantages of having a food product go direct from the farm to a cannery, where it is cooked, hermetically sealed and protected from contamination, are obvious as compared with the preparation of foods from raw products which have been harvested for a considerable time and handled by many people and which may have been exposed to unsanitary conditions before they reach the consumer.

## Chemical Preservatives

Chemical preservatives are entirely unnecessary in canned foods if they are properly sterilized, and furthermore the addition of injurious preservatives or other substances to any food is prohibited by law. The preservation of canned foods is accomplished entirely by sterilization by heat. Artificial colours were formerly used in a few red fruits, but this practice has been discontinued since canners are now able to retain the natural colour of the fruits without them.

## Flavour

As far as flavour is concerned, there is, of course, the same difference between canned foods and the raw products as there is between cooked and raw. No one expects the flavour of the latter to be the same, but the fact that most canned foods undergo their principal cooking and process after the can has been sealed helps to a great extent to preserve the natural flavour.

## Vitamins

Much has been written in recent years about vitamins and their importance in human nutrition. The absence of vitamins from the diet is known to cause disorders and to check proper growth and development. Research work on the subject of vitamins in canned foods carried on co-operatively at Columbia University and in the Research Laboratory of the National Canners Association has disclosed some new and interesting facts. For instance, apples canned by the modern process do not lose their content of vitamin C as in the case of apples held in ordinary cold storage. Cabbage canned by commercial methods is five times as rich in vitamin C as cabbage cooked in the ordinary way in the home. Investigations on a number of canned products have shown that, with the exception of

vitamin C, canning does not appreciably affect the vitamins. In the case of vitamin C it is not the heat of cooking so much as the presence of oxygen during the cooking that destroys it. When this oxidization is eliminated the destructive effect of heat is minimized. Canned foods, in being cooked largely out of contact with air, are therefore much richer in vitamin C than similar food prepared from raw materials and cooked in the ordinary way in the home kitchen.

## PRODUCTION

### Statistics 1927-28

The values of the products of the various divisions of the Fruit and Vegetable Packing Industry covered by this report are given below for the years 1928 and 1927. The 1929 figures are not yet available.

| Fruits, canned | 1928 Value $ | 1927 Value $ |
|---|---|---|
| Apples | 420,211 | 285,463 |
| Cherries | 335,944 | 190,517 |
| Peaches | 404,614 | 315,495 |
| Pears | 940,811 | 476,764 |
| Plums | 343,567 | 107,663 |
| Raspberries | 234,249 | 294,603 |
| Strawberries | 232,877 | 269,687 |
| All other fruits | 371,600 | 316,009 |
| Total | 3,283,873 | 2,256,201 |

| Vegetables, canned | | |
|---|---|---|
| Beans, green or wax | 643,845 | 387,897 |
| Beans, baked | 3,358,940 | 3,133,600 |
| Corn | 2,300,446 | 1,477,444 |
| Peas | 2,536,556 | 2,460,859 |
| Tomatoes | 4,288,849 | 3,789,909 |
| All other vegetables | 571,245 | 385,154 |
| Total | 13,699,881 | 11,634,863 |

| Fruits, preserved | 1928<br>Value<br>$ | 1927<br>Value<br>$ |
|---|---|---|
| Jams | 5,339,602 | 4,980,735 |
| Jellies | 290,386 | 279,065 |
| Marmalades | 880,167 | 739,136 |
| Fruits, glacé | 369,672 | 272,177 |
| Syrups and fruit juices | 2,296,166 | 2,294,615 |
| Fruits, crushed, preserved, etc. | 402,055) | 425,247 |
| Other preserved fruits | 21,176) | |
| Total | 9,599,224 | 8,990,975 |
| Pickles, sauces and relishes | | |
| Pickles, all kinds | 2,253,536 | 1,927,172 |
| Catsups, sauces and relishes | 2,861,618 | 2,504,130 |
| Miscellaneous products | | |
| Cider | 78,331 | 243,225 |
| Tomato pulp, purée, etc. | 37,304 | 94,176 |

It might be noted that the 1928 production shows an increase in practically all items, the largest being in the tree fruits.

## Production by Provinces

The following notes will give some idea of the 1929 production in the licensed plants of the various provinces. It might be explained that all licensed plants are under the supervision of the federal Department of Agriculture. In addition to these plants, there are a number of small unlicensed plants throughout the Dominion with their market confined to the province in which they operate.

### British Columbia

British Columbia has 21 licensed plants engaged in the various branches of this industry, located on the south-eastern coast of Vancouver island, on the adjacent mainland, in the Okanagan valley and south, and in the Arrow Lakes district. Many of these are large establishments with the most modern equipment and their output includes practically all the Canadian products of this industry. This is the

only province in which apricots and loganberries are canned.

## Alberta

There are but three licensed establishments in this province. Tomatoes are canned at Medicine Hat, a variety of vegetables at Edmonton, and the Calgary plant is engaged in the manufacture of marmalade.

## Manitoba

All the plants of this province, six in number, are in, or near, Winnipeg. One plant cans green or wax beans, beets, peas and spinach, and the others have as their products cider, catsups, sauces and pickles. It is interesting to note that one of the largest of these manufacturers states that it is impossible to obtain cucumbers, which represent between 70 and 80 per cent of their requirements in vegetables, locally, as frosts in the late spring and early autumn have greatly discouraged their cultivation. This firm procures its supply from Minnesota.

## Ontario

With the exception of a plant at Emo in the Rainy River district, with peas as its sole product, and another at New Liskeard canning blueberries and peas, the industry in Ontario is confined to the southern part of the province, where almost 200 plants are engaged in processing the many varieties of fruits and vegetables grown there. Many large and modernly equipped plants are found throughout the western Ontario peninsula within a few miles of the shores of the great bodies of water surrounding that territory and extend from Napanee on the northeastern shore of lake Ontario to Collingwood on the southern point of Georgian bay. The district surrounding Belleville is a well known vegetable canning centre and the Niagara territory is famous

for its canned fruits.

In the extreme eastern part of the province vegetables, and in some cases apples or berries, are canned in small plants operated by farmers.

### Quebec

Quebec has 46 licensed plants, the majority of which are in the southeastern part of the province. Jams, jellies and marmalade are manufactured in quantity in Montreal and Quebec. Wild blueberries are canned at three points on the St. Lawrence above the Saguenay, and also at two points in the lake St.John district.

### New Brunswick

This province has 9 licensed plants, 7 canning wild blueberries on the northeastern coast and 2 in Saint John, one of which makes pickles, the other, jams, fruit syrups and juices.

### Nova Scotia

Apples are the main products of the fertile Annapolis district and the greater part of the output is either sold in the fresh or dried state. The products of this district include canned apples, pears and strawberries; jams and jellies; cider; green or wax beans. Blueberries are canned at a number of plants along the northern coast at one of which pickles are also manufactured and at another peas and green or wax beans are canned. Without including the evaporators or dehydration plants, there are 17 licensed establishments within this province.

### Prince Edward Island

The province has four licensed plants, two at Murray River, one at Mt. Stewart and one at Charlottetown.

Blueberries are canned at each of these plants, and at Charlottetown baked and green or wax beans are also produced.

## IMPORTS

### Statistics 1927-29

| Fruits, in cans or other air-tight packages. | 1927 $ | 1928 $ | 1929 $ |
|---|---|---|---|
| Peaches | 497,001 | 761,023 | 958,741 |
| Pears | 84,396 | 107,427 | 134,806 |
| Pineapples | 1,001,287 | 1,307,684 | 1,183,036 |
| Fruits, n.o.p. | 668,043 | 755,770 | 895,472 |
| **Vegetables (In cans, etc.)** | | | |
| Beans, baked | 73,382 | 65,914 | 95,551 |
| Corn | 151,231 | 295,077 | 330,308 |
| Peas | 337,390 | 315,618 | 423,101 |
| Tomatoes | 101,978 | 120,813 | 166,439 |
| Asparagus | 229,772 | 249,262 | 316,052 |
| Vegetables, n.o.p. | 552,755 | 484,509 | 536,491 |
| Jams, jellies & preserves, n.o.p. | 338,704 | 335,774 | 378,279 |
| Pickles, catsups & sauces | 649,268 | 600,096 | 638,326 |
| Cider | 231 | 251 | 28 |
| Fruit juices and fruit syrup, n.o.p. | 193,766 | 199,681 | 428,820 |
| Fruit pulp | 7,506 | 39,279 | 23,744 |

## EXPORTS

| Fruits, in cans or other air-tight packages. | 1927 $ | 1928 $ | 1929 $ |
|---|---|---|---|
| Peaches | - | - | - |
| Pears | - | * 140,052 | 291,196 |
| Fruits, n.o.p. | 419,149 | 245,504 | 131,347 |
| **Vegetables (In cans, etc.)** | | | |
| Beans, baked | 814,423 | 1,026,855 | 530,835 |
| Corn | - | - | - |
| Peas | - | - | - |
| Tomatoes | 14,925 | 83,118 | 627,962 |
| Asparagus | - | - | - |
| Vegetables, n.o.p. | 112,305 | 191,729 | 113,648 |
| Jams, jellies & preserves, n.o.p. | 17,046 | 10,895 | 10,859 |
| Pickles, catsups & sauces | 707,347 | 519,525 | 631,821 |
| Cider | 5,667 | 1,623 | 6,059 |
| Fruit juices and fruit syrup, n.o.p. | 231,317 | 194,584 | 304,484 |
| Fruit pulp | - | - | - |

* April 1st - December 31st, 1928.

## Canned Fruits

The greater part of the Canadian imports of peaches and pears, which have almost doubled in value in the last two years, comes from the United States and the balance from Australia. Canada, nevertheless, exports large quantities of canned pears to the United Kingdom. In 1929, canned pineapples to the value of half a million dollars came from the United States, the Straits Settlements supplying nearly as much, and Hawaii, British South Africa, and the United Kingdom the remainder. "Fruits, n.o.p." were all from the United States except for the comparatively small quantities from the United Kingdom, Hongkong, Australia, the Netherlands and Spain. The greater part of Canada's entire exports of canned fruits went to the United Kingdom and the balance to the United States, New Zealand and other countries.

## Canned Vegetables

The imports of asparagus, corn and baked beans, approximately half of the peas, one-quarter of the tomatoes, and two-thirds of the "vegetables n.o.p.", came from the United States. Peas were also imported in great quantities from Belgium, tomatoes from Italy, and "vegetables, n.o.p.", from the United Kingdom, Hongkong, Belgium, France, Italy, Japan, the Netherlands and Spain. The exports of baked beans to Newfoundland increased in 1929 from $25,126 to $29,838, and to New Zealand from $2,711 to $42,191, but exports to the United Kingdom decreased from $992,188 to $454,365. As for corn, peas and asparagus, Canada's exports, if any, were negligible as they are not shown separately in the trade statistics. A short crop during 1928 in certain parts of the United States resulted in greatly increased exports of canned tomatoes to that market in 1929 and to the decline,

perhaps, in exports to the United Kingdom and Newfoundland. The exports of this product to these three countries during 1928 and 1929 were as follows:

| | 1928<br>$ | 1929<br>$ |
|---|---|---|
| United Kingdom | 39,820 | 978 |
| United States | 26,695 | 614,036 |
| Newfoundland | 10,916 | 8,544 |

Under the United States Tariff Act of 1930 the duty on canned tomatoes was increased from 15 to 50 per cent. Almost half the exports under "vegetables, n.o.p." went to the United Kingdom and the balance mainly to British South Africa, New Zealand, Newfoundland, United States and France in that order.

## Jams, Jellies and Preserves

Almost half of the imports of jams, jellies and preserves, (including condensed mincemeat), came from the United Kingdom and the remainder mainly from France, Italy and the United States, in that order. Exports of these goods are small and have not varied appreciably in the last few years.

## Pickles and Sauces

The imports of pickles and sauces have grown slightly during 1929, but not to such an extent as the exports. The largest separate import item is that of sauces and catsups in bottles. Pickles came from the United Kingdom, United States and Japan, while soy sauces were imported from the latter country and Hongkong. The 1929 exports were 20 per cent greater than those of 1928, with Great Britain providing by far the largest market. Apparently some of these products reach Europe via the United Kingdom as it is stated by a Canadian Trade Commissioner that Canadian tomato sauce is commonly seen in Switzerland.

### Cider

Practically all the exports of cider went to the United States. The exports of concentrated cider juice, large quantities of which find a market in the United Kingdom, are included under fruit juices.

### Fruit Syrups and Fruit Juices

Eighty-three per cent of the imports of fruit syrups and fruit juices including lime juice came from the United States, the imports from that country being more than double that of the previous year. On the other hand the United Kingdom took 85 per cent of our exports of fruit syrups and fruit juices, with practically all the remainder going to other parts of the Empire.

### Fruit Pulp

The 1929 imports of fruit pulp were less than those of 1928 and came from Australia, the United Kingdom and the United States. There were little, if any, exports of this product from Canada as they are not shown separately in the trade statistics.

## CANADIAN CUSTOMS TARIFFS

The duties on imports of canned and preserved fruits and vegetables as in effect on October 1, 1930, were as follows:-

| Tariff Item | Vegetables | Br.Pref. | Rates. | |
|---|---|---|---|---|
| | | | Inter. | General |
| 89 | Vegetables prepared in air-tight cans or other air-tight containers, the weight of the containers to be included in the weight for duty: | | | |
| | (a) Beans, baked or otherwise prepared, per pound | free | 1¼cts. | 1½ cts. |
| | (b) Corn and tomatoes, per pound | free | 1¼cts. | 2 cts. |

| Tariff Item | Vegetables | Rates. Br.Pref. | Inter. | General |
|---|---|---|---|---|
| | (c) Peas, per pound. | 1 ct. | 1½ cts. | 2 cts. |
| | (d) N.O.P. | free | 27½ p.c. | 30 p.c. |
| | Schedule D. - French Treaty. Vegetables, tomatoes excepted, including baked beans, in cans or other air-tight packages, n.o.p., the weight of the cans or other packages to be included in the weight for duty per pound - 1 ct. | | | |
| 90 | Vegetables, prepared or preserved: | | | |
| | (b) Pickled or preserved in salt, brine, oil or in any other manner, n.o.p. | 15 p.c. | 32½ p.c. | 35 p.c. |
| | (c) Vegetable extracts or juices, liquid mustards, soy and vegetable sauces of all kinds. | 15 p.c. | 32½ p.c. | 35 p.c. |
| | (d) Pastes, hash and all similar products, composed wholly of vegetables or of vegetables and meat or fish or both, n.o.p. | 15 p.c. | 32½ p.c. | 35 p.c. |
| | Fruits | | | |
| 99a | Figs dried; plums, prunes and dates, dried, unpitted; per pound. | free | 2/3 cts. | 2/3 cts. |
| 105 | Fruit pulp, with sugar or not, n.o.p., and fruits frozen, per pound. | 1½ cts. | 2½ cts. | 3 cts. |
| 105b | Olives and cherries in brine, not bottled. | 10 p.c. | 17½ p.c. | 30 p.c. |
| 105c | Fruits and nuts, pickled or preserved in salt brine, oil or any other manner, n.o.p. | 20 p.c. | 32½ p.c. | 35 p.c. |
| 105d | Jellies, jams, marmalades, preserves, fruit pastes, fruit butters and condensed meats, per pound. | 2¾ cts. | 3¾ cts. | 3¾ cts. |
| 105e | Fruits and peels, crystallized, glacé, candied or drained; cherries and other fruits of crême de menthe, maraschino or other flavour. | 22½ p.c. | 35 p.c. | 35 p.c. |

| Tariff Item | | Rates<br>Br.Pref. | <br>Inter. | <br>General |
|---|---|---|---|---|
| 106 | Fruits, prepared in air-tight cans or other air-tight containers, the weight of the containers to be included in the weight for duty:- | | | |
| | (a) Apricots, peaches and pears, per pound. | 1¾ cts. | 2½ cts. | 2¾ cts. |
| | (b) Pineapples, per pound. | ½ ct. | 2½ cts. | 2¾ cts. |
| | (c) N.o.p., per pound. | 1¾ cts. | 2½ cts. | 2¾ cts. |
| 148 | Cider, not clarified or refined, per gallon. | free | 5 cts. | 5 cts. |
| 149 | Cider, clarified or refined, per gallon. | free | 10 cts. | 10 cts. |

CONSUMPTION

The increases in the apparent consumption of canned and preserved fruits and vegetables as shown in the table below, are rather remarkable considering the population rise of only six per cent.

| Canned Fruits | 1923 | 1928 | Increase or Decrease |
|---|---|---|---|
| | $ | $ | % |
| Production | 1,732,118 | 3,283,873 | + 90 |
| Imports | 726,880 | #2,931,904 | + 300 |
| | 2,458,998 | 6,215,777 | |
| Exports | 690,697 | 385,556 | - 45 |
| Apparent Consumption | 1,768,301 | 5,830,221 | + 225 |
| **Canned Vegetables** | | | |
| Production | 7,175,419 | 13,699,881 | + 90 |
| Imports | 924,782 | 1,531,193 | + 65 |
| | 8,100,201 | 15,231,074 | |
| Exports | 1,347,985 | 1,301,702 | - 4 |
| Apparent Consumption | 6,752,216 | 13,929,372 | + 106 |
| **Preserved Fruits** | | | |
| Production | 5,588,043 | 9,599,224 | + 72 |
| Imports | 262,179 | 335,774 | + 28 |
| | 5,850,222 | 9,934,998 | |
| Exports | --- | 10,895 | |
| Apparent Consumption | 5,850,222 | 9,924,103 | + 69 |

#Canned pineapple accounts for $1,307,684 or 44 per cent of the 1928 imports of canned fruit.

| Pickles, Sauces, &c. | 1923 | 1928 | Increase or Decrease |
|---|---|---|---|
| | $ | $ | |
| Production | 4,061,749 | 5,115,154 | +25 |
| Imports | 543,111 | 600,096 | +10 |
| | 4,604,860 | 5,715,250 | |
| Exports | --- | 519,525 | |
| Apparent Consumption | 4,604,860 | 5,195,725 | +12 |

DOMESTIC MARKET

The domestic demand for processed fruits and vegetables has grown very rapidly in the past few years, as will be seen by the above table, but the imports have also greatly increased.

The shelves of the Canadian grocer contain, in addition to imported tropical fruits such as the pineapple, a great variety of imported products similar to those commonly grown in this country. Belgian peas, Italian tomatoes, Australian peaches, and many canned fruit and vegetable products of the United States are imported in yearly increasing quantities despite in some cases tariffs and greater transportation costs.

The principal reason for the failure of the Canadian manufacturers of these products to realize, to a larger extent, the benefits of the increasing consumption is that the average housewife is unaware of the existence of standardized grades of products. Many grocers are not fully acquainted with Government standards or perhaps realize more profit on the imported article. Another reason lies in the fact that many Canadian packers seemingly are content to put up goods which grade "Standard Quality" rather than the better grades which naturally command a higher price and ensure greater profit. An official of a large canning concern stated that one of the explanations for the increase in the importation of American canned goods into Canada, is found in the attractive full page advertisements in

certain American magazines enjoying a wide circulation in this country. According to statistics on the export trade in canned foods from the United States in 1928 (U.S. Commerce Report, May 20, 1929) Canada is that country's second largest market, being exceeded only by the United Kingdom.

## FOREIGN MARKETS

In view of the steadily increasing world consumption of canned fruits and vegetables there is no reason why Canadian products should not share in this increase. For notwithstanding that canned food exports of the United States (the world's greatest exporter of this type of foodstuffs) increased in volume during 1928 by nearly 16 per cent over that of 1927, an official of the United States Department of Commerce stated that sales efforts, advertising and the intrinsic worth of the products are still operative in widening established markets and opening new ones, and though it must be realized that Canada has neither as wide a diversity of these products for export nor as large a domestic market upon which a foundation may be laid, opportunities exist as they did at one time for other Canadian manufactured products which are now being successfully exported to many foreign markets. The bulk of the present exports go to the United Kingdom, Newfoundland and New Zealand and it would seem that these countries, along with other parts of the Empire, also present the best opportunities for the further development of Canadian foreign trade in processed fruits and vegetables.

Occasionally a short crop of a certain fruit or vegetable, in a foreign country where the domestic demand is large, also results in a good opening for the Canadian product. Such conditions resulted in large exports in 1927

of canned peas to France and in 1929 of canned tomatoes to the United States.

Information regarding developments in a number of foreign countries, which will be helpful in determining whether or not Canada's foreign trade in processed fruits and vegetables is capable of being further extended, is contained in the section entitled "Information on Various Foreign Markets" on pages 43-54 inclusive.

## RAW MATERIALS

### Favourable Areas for Commercial Production

The map at the back of this report shows the principal favourable areas where various kinds of fruits and vegetables may be, or have been, grown in commercial quantities for processing. A list of the operating companies, together with the location and products of each, immediately precede the map.

## CONTAINERS

### Tin

Appert discovered the process of preserving food by heating in glass bottles but it was not until 1810 that the first tin cans or canisters were used. These cans were quite expensive, a tinsmith being able to make only sixty or seventy in a day, and for a long time glass bottles and jars were used as much as the tin containers. Improvements, however, were steadily effected in the latter and the cost of construction reduced through the development of machinery which today can make 100,000 cans a day. The so called "tin can" is really made of sheet steel coated with tin, the steel giving the strength and the tin preventing rust.

Besides the round cans in which most foods are packed there are others of special shapes tailored to fit certain products as sardines and asparagus. Cans are coated inside with a lacquer made of vegetable gum to preserve the colour of red fruits and vegetables such as berries and beets.

Under the Meat and Canned Foods Act eleven standardized containers for canned fruits and vegetables are defined. By far the most popular of these is the No. 2 can, 4 9/16 inches high with a diameter of 3 7/16 inches, in which most of the peas, corn and green beans are packed. The No. 1 can, however, having a height of 4 inches and diameter of 2 11/16 inches, is rapidly gaining in popularity, the demand coming from families of 2 or 3 members.

All containers not of standard sizes are required to have marked thereon, in addition to the information required on standard sizes, the net weight of the contents and, unless the container is transparent, the drained weight of the solid content. The act also specifies eight standard containers for jams and jellies.

In the United States the regulations are administered under the Federal Food and Drugs Act. There are no Government standards as is the case under the Meat and Canned Foods Act of Canada. State laws regulate the information to be shown on the label and are practically uniform in that the weight, measure or numerical count must be given. The many different types of cans in use led the Division of Simplified Practice of the United States Department of Commerce to make a survey, the result of which was announced on January 29, 1930, and indicated that 27 sizes could very well replace the 64 in use. These 27 sizes are now considered standard for the United States in the packing of fruits and vegetables.

## Glass

As has already been stated glass has long been used almost exclusively in home canning and for those products which require for sterilization no higher temperature than that of boiling water. With the improvement in the quality of glass and the advent of better seals there has been a large extension of its use in commercial lines for products requiring even as high as 250°F for sterilization in their manufacture.

The preparatory processing is the same whether glass or tin containers are used. Breakages due to changes of temperature are small compared with what they were ten or more years ago but the "unbreakable glass" state has not yet been reached and reasonable precautions must be taken to minimize the loss. Processing at ordinary boiling temperature or below can be carried out in exactly the same manner with glass as with tin, either in steam or in water, the only difference being in the time factor as glass is inferior to metal in heat conductivity.

## Cellulose and Aluminium

Although no immediate revolution in the canning industry is promised by substitutes for the tin can, there is much interesting evidence of progress along these lines. Cost is and probably will continue to be a deterrent so long as the prices of the materials used in the manufacture of cans remain at their present low level (Nov., 1930) because it is doubtful whether the modern housewife, grown accustomed to the tin container, can be persuaded to pay a premium for containers made of other materials. Novelty is a factor, however, that may encourage production on a commercial scale, particularly in packing high grade products.

A transparent cellulose product is now being experimented with for use in the sides of round cans and tops of flat tins, for coating the inside of tin cans, and for making the paper used in paper fruit containers absolutely waterproof.

Experiments are also being conducted in the use of aluminium cans in Norway and efforts are being made to introduce them among Norwegian fish packers but the difference in price is still an obstacle.

## THE PLANT

### Location

Several factors should determine the location of a canning factory, the most important of which is the supply of raw materials, and the others, which are hardly of less importance, a plentiful supply of good fresh water, availability of suitable help and adequate transportation facilities.

The economics of production will determine in a very large measure the location of a factory with reference to labour, raw materials and shipping facilities. The order of the importance of these factors will not be the same in each line of canning, but will be dependent upon the amount of labour required, the nature of the raw materials as to perishability, and the amount of waste. In the case of fruits requiring much hand labour, or a factory operating over a considerable part of the year, it will be found more economical and satisfactory to haul the product by rail or truck rather than to transport the help. In the case of corn, where the waste in husk and cob is such a large part, and where machinery is displacing workers, the reverse will be true. Peas formerly belonged in the same class as corn,

but, as only the shelled peas are now being trucked, the factory may be located at any good site. Choosing a location with reference to labour should be made dependent not so much on getting near, or in, a city or large town as in a vicinity that will attract the better class of female labour.

There is no question as to the advantage of locating a factory near the fresh material. It is a necessity for the proper handling in the case of some products, such as asparagus and corn, and is desirable in all cases for it ensures the collection of the fruit or vegetables at the right time and tends to lessen losses from deterioration.

## The Small Plant

Modern tendency is towards the conducting of canning operations on a large scale. Such procedure has manifest advantages in the purchase of graded supplies, in the savings effected through mechanical equipment, in the employment of more skill, thus avoiding losses, and effecting savings in by-products and in sales opportunities. The small packer, on the other hand, must find a locality with a limited supply of some product which can be purchased cheaply, and where there is an abundance of labour; or he must depend upon the turning out of a quality product, an exceptional motive which is slowly recognized or rewarded. Equally good packing can be done in the large or small plants if the same skill be employed. The volume of the output does not necessarily furnish a criterion as to quality.

Some products such as apples, pears, berries, grapes, tomatoes, asparagus, cabbage, corn (Maryland style), beans (ungraded and cut), kraut, cauliflower, celery, sweet

potatoes, carrots, spinach and beets require much hand work in their preparation and only the simplest mechanical equipment, and these may be packed in small units.

## Equipment

The kind and amount of equipment are determined solely by the product or products and the volume to be canned. Some products like corn, peas and green beans require much special equipment; others such as beets, carrots, sweet potatoes, cabbage and cauliflower need merely that which is common to most factories using pressure cookers. A grader is about all that is required for beets, carrots or sweet potatoes. Spinach is handled best with special washer and blanchers. Asparagus needs little aside from trimming tables and some wooden blancher baskets. Dry white beans or kidney beans require a common soaking equipment. A scalder is the only distinctive piece of apparatus necessary for handling tomatoes. For pulp and purée, a cyclone, finisher and evaporator, either open or vacuum, are a necessity, and the cyclone can also be used for pumpkin and squash. Nearly all the fruits can be handled over the same equipment. The peach and apricot need the lye peeler and the blancher. The filling tables, syrupers, exhaust boxes, closing machines, and cooker are the same.

The catalogues of the various manufacturers of canning machinery might lead one to think that very elaborate outfits were an essential. Certain pieces are necessary to do a special kind of work. others are economical as part of a unit, and still others may be desirable in order to reduce the number of labourers. The amount of equipment should be determined in a measure by the quantity of intelligent

labour available. It is surprising how much can be done in some factories where the machines are arranged to be kept in continuous operation, compared with others of much larger size, working only at intervals.

### Water Supply

The question of the water supply should be a very important one in the selection of the site. Few persons have any conception of the quantity of water needed in a factory. One of the largest American packers of peas uses nearly half a gallon per can. Water is necessary for steam, for brine and syrup, for floors, sprinkling the goods and cooling the cans. All water used in the handling of the fruit at any stage should be fit for drinking purposes and, although that used for cooling, for scrubbing the floors, and for sprinkling does not necessarily need to comply with the same standard as that used on the product, it is preferable that it should do so.

Hard water is objectionable for the boiler supply, for brine or syrup, and for soaking products like dry beans, and should therefore be softened by appropriate methods.

It need hardly be mentioned that good drainage is essential in the case of a plant using such large quantities of water.

## PROCESS OF CANNING

### Preparation

The steps in canning vary with the different products, but there are certain processes common to all, as collecting the product, grading for quality, washing, filling the can, sealing, processing and cooking. The sequence of steps necessary for the preparation depends wholly upon the

product. In general, however, the superintendent attempts to make a bulk grading when each load is delivered. The varieties are kept separate, and materials of the same kind but in different stages of maturity, or showing marked variation in size or quality, are handled separately. Careful grading is followed at nearly every step until the product is placed in the can, and this phase is emphasized from the start. Some of the fruits need little preparation other than picking out foreign matter and defective material, whereas others require peeling, pitting, coring, and sizing. Some vegetables require more work than do the fruits, as threshing peas from the vines, husking and silking corn and cutting it from the cob, snipping and stringing beans, peeling beets and potatoes. A great deal of this work is done by machinery better than it can be done by hand. Peaches are peeled by lye; peas are threshed by a machine at a speed greater than could be attained by a hundred hands, and with a minimum of injury to the product; corn is husked, silked, and cut without hand labour other than feeding the ears to the machine, which is done at the rate of a hundred or more a minute. The work upon asparagus, however, is almost all hand labour, as no machinery has yet been devised that will satisfactorily handle it.

## Grading

Grading to secure uniformity in a product, in both appearance and quality, is a necessity in all high-class packing. Grading for size is very largely machanical; fruits are passed over screens having standard openings, peas are sifted through perforated cylinders, and beans are graded for thickness over vibrating rolls, and later cut to standard length. Grading for quality, for uniform texture,

for colour, etc. can not be done by machines, but requires handwork. As far as possible, this work is done in the early stages prior to washing.

### Washing

The washing that all products receive in a factory is far more thorough than that which is given in a home kitchen. In the packing of peas which may be considered a typical product of a canning factory nearly half a gallon of water is required per can. Washing machines of seemingly every conceivable type are in use; various forms of troughs provided with currents of water agitate the product, thus loosening and removing the dirt; perforated cylinders and conveyors work between sprays of large volume which rinse off the dirt, and high pressure sprays cut and remove the more adherent dirt. Some products are washed several times both before and after blanching or grading. The washing extends to the machines and cans, mechanical washers becoming common in cleaning buckets and pans after each operation.

### Blanching

Many vegetables and certain fruits are given a brief pre-cooking in hot water, the operation being termed blanching. In the case of such products as asparagus, beans and peas the object is to remove the sticky or gummy substance from the surface and also to cause a certain amount of softening which materially assists the processing of such vegetables as asparagus and often improves the quality of the product. In the case of peaches, cherries and other fruits blanching ensures better packing and greater uniformity in colour. This process is not resorted to for

the purpose of bleaching the fruit or vegetables as many persons have assumed.

## Filling the Cans

The majority of fruits are filled into cans by hand as they usually have to be arranged in layers. For instance, a definite number of peaches or pears cannot be inserted by machinery to give a uniform content without crushing or injury. All fruits are filled by weight. The reverse, however, holds in the case of most vegetables; corn, peas, baked beans, pumpkin, and, often tomatoes are filled by volume, the work being done by machines. String beans are partially filled by machine, the weight being corrected by supplementary hand filling.

## Syruping and Brining

Nearly all products have a syrup or brine added. All high grade fruits require a syrup, which contributes equally with the fruit in determining the final grade of the product. Only the lowest grades are packed in water. Vegetables require a salt or a sweet brine, the latter being made with a mixture of salt and sugar. Such syrups or brines are added in amounts sufficient only to preserve the product. Certain vegetables like tomatoes, squash and pumpkin do not need the addition of any liquid.

## Exhausting

After the cans have been filled they are either heated gradually to expel most of the air or sealed in a chamber under partial vacuum. This operation, known as exhausting, ensures cans with properly collapsed ends.

## Closing

The method of closing the cans depends upon the type used. The solder-top cans are sealed by automatic machines,

which wipe the tops, place the caps, apply the flux, heat the solder, and close the vent without the introduction of hand labour. The hand-soldering capper or capping steel is seen in only the smallest plants where it is used merely for patching.

The open-top can is closed by automatic machinery which places the cover in position and crimps the edge to the body of the can by means of heavy rolls. No acid or solder is used, but a cement substance or paper gasket is interposed between the laps of tin.

## Processing

The final act of sterilizing the cans is known as the process, and may be carried on below, at, or above the boiling temperature of the water, depending upon the material. When done below or at the boiling temperature, open water baths are generally employed and the temperature controlled by some adequate device. When carried out above the boiling point, the work is accomplished in retorts or autoclaves in water or in steam under pressure. By means of the latter any suitable temperature can be obtained. Fruits do not need a temperature above the boiling point; most vegetables cannot be processed in one operation with safety at boiling. The time depends upon the fluidity of the material, as the heat will penetrate quickly if free liquid, brine or syrup be present, but slowly if the product be fairly heavy or solid. The heat penetration may be greatly aided by rolling or turning the can, thus agitating the contents. The process necessarily depends upon two factors - the resistance of the organism to heat, and the nature of the material, as the latter must be cooked to the proper degree but without injury from too high temperature or prolonged heating. It is upon the use of the proper process that quality depends.

## Cooling

The final step is the cooling of the cans, which is done to prevent prolonged cooking of the product. Different methods are used, as turning cold water into the retort or cooker, removing the cans from the cooker to a cooling tank, spraying the cans in the open, stacking the cans in trays so that air may circulate freely and the cans cool slowly. The method depends largely upon the product and the effect desired.

## PRODUCTION COSTS

It is impossible, on account of various factors entering into the cost of manufacture of the products of this industry, to give any definite figures on production costs. James H. Collins, a well known American writer, in his book "The Story of Canned Foods" published in 1924, states:-

"Figures compiled by accountants show that for every dollar that his product costs him - actual packing expenses, but not profit - the canner spends about 31 cents for his fruit, vegetables, fish, or other raw materials. To his workers he pays about 9 cents in wages. Cans cost 23 cents, boxes 6 cents, labels 1 cent, sugar, salt and other seasoning 2 cents, rent, depreciation on machinery and other factory expenses 16 cents, selling expenses 5 cents, and general expenses 7 cents. Roughly, that dollar represents one dozen cans of staple tinned foods."

The Dominion Bureau of Statistics gives the following figures regarding the 278 Canadian plants reporting in 1928 which include those manufacturing a great number of miscellaneous products such as canned soups, canned chicken, peanut butter and mincemeat:-

| | |
|---|---|
| Capital, fixed and working.... | $35,967,855 |
| Salaries and Wages........... | 4,717,736 |
| Materials used................ | 20,198,580 |
| Value of products............. | 35,313,722 |

Containers, labels and caps amounted to 23 per cent of the value of products; other materials used, 34 per cent; the salaries and wages absorbing 13 per cent.

## GOVERNMENT SUPERVISION

Before the products of a fruit or vegetable canning plant can be exported from Canada or from one province to another the plant and product must conform with the provisions of the Meat and Canned Foods Act which is administered by the Fruit Branch of the federal Department of Agriculture. In order to obtain a license, the operating company must observe and maintain certain sanitary conditions in its factory. The products, unless otherwise provided for, are graded as Fancy Quality, Choice Quality, Standard Quality or Second Quality, and the labels, which must be a true representation of the quality, quantity and weight of the contents of the container, must be submitted to the Fruit Branch for approval. Inspectors from that office visit the various plants from time to time to see that the regulations are complied with.

When the Meat and Canned Foods Act was passed in 1907 the Department's whole efforts were at first directed to the enforcement of sanitary conditions but it soon became evident that the scope of the work must go much further in order to ensure that the public received not only a clean sanitary product but one specifically defined. Accordingly the Act was amended to provide for regulations defining standards.

Standards were adopted after four years of close study of conditions in the industry in Canada. The department had the benefit of consultation with, and criticism by, the highest food authorities in Canada and the United States. These standards were given two years of practical demonstration in over forty factories in Canada and were accepted by ninety-five per cent of the industry. Canned foods are graded on the basis of uniformity of maturity, colour, and size, on workmanship and general condition. The Government does not say what product may or may not be packed but it does insist, however, that all canned or dried food must be the product of sound wholesome stock in every way fit for human food. It must be manufactured under sanitary conditions and labelled to show the quality as defined in the regulations pertaining thereto. Goods imported into Canada are subject to similar label requirements.

## NEW DEVELOPMENTS

### * Frozen Fruits and Vegetables in Small Containers

Progress in mechanical refrigeration, together with changes in food distribution practice, has brought into striking prominence the marketing of frozen fruits and vegetables in small containers.

The freezing of fruit and its marketing in barrels and other large containers, however, has been practised for many years, such fruit being used in the manufacture of preserves, jams and jellies; in the preparation of crushed fruits and fruit syrup for soda fountain use; in pie-baking by hotels, restaurants and bakers; and by manufacturers of ice cream. The process consists essentially of freezing with or without sugar, or storing the pack at a relatively low temperature.

It is believed that marketing in small containers has enormous possibilities but it will require considerable research before some of the problems associated with this new development are overcome. The maturity of the raw material for such purposes is much more important than in the case of canned products. Some varieties differ considerably in their behaviour when frozen and thawed. The proper type of container is another problem to be decided as it may in some cases require a vacuum. Again, although rapid freezing has proved of great advantage in the marketing of meats and fish, the chemistry of plant-tissue freezing is not the same. Bacterial behaviour under conditions involved in freezing is as yet imperfectly understood. With fruits, this fact may not appear so essential, but in the case of vegetables, it will be necessary to obtain positive assurance by adequate experimentation that there is no possibility of danger to human health, if the future of such frozen products is to rest on a secure and lasting foundation. The devising of the cheapest and most efficient methods of cooling and freezing does not present insuperable difficulties but will take time and research. The repacking of these products in the consuming markets has given rise to considerable discussion during the past year and it is a belief shared by many that eventually the packing of small containers will be done to best advantage in the producing sections. Mechanical refrigeration is, of course, the cornerstone upon which the frozen pack industry rests although proper recognition must be given to the importance of refrigerants, such as solid carbon dioxide, in the ultimate distribution of the frozen product. Until a reasonably certain program is developed by research and by business organizations in the essential phases of frozen

pack, a policy of common sense and gradual conservative expansion will lead to fewer mistakes and less wasted effort, and eventually place this industry on a sound technical and financial basis.

* From an article in Food Industries, April 1930, by H.C. Diehl, U.S. Department of Agriculture.

These products are on sale in many parts of the United States and are apparently proving quite popular as leading canning interests in that country, anticipating the competition of frozen foods, are now experimenting on the development of a new type of container with a tin top and bottom and transparent sides, which is expected to offset the advantages possessed by frozen foods in that the customer can see them before buying.

Frozen fruits are being put up by a number of Canadian firms in both eastern Canada and British Columbia and, while they are not yet sold by the retail trade to any appreciable extent, reports from a number of stores where strawberries were sold in this form would seem to indicate a good demand during that period of the year when the fresh product is not available.

## Tomato Juice

Tomato juice is a beverage which has but recently appeared on the market and seems to be increasing in popularity. The juice is extracted in the same manner as for other tomato products such as purée and catsup and is offered to the trade as a straight juice containing all the pulp, a clarified juice with the pulp removed, or a juice in admixture with small amounts of pulp. The first is proving the most popular and, from the packer's standpoint, is the most easily prepared. The juice may be carbonated

or spiced to produce tomato juice cocktails, which also have been favourably received by the public.

Only choice tomatoes should be used and the equipment in which they are handled and the processing of the juice must be such that no harm is done to the delicate flavour of the product. An example of such harm is the metallic flavour of the juice when plain steel paring knives are used. Equipment made of stainless steels, or enamelled, glazed or tinned surfaces, should be the only materials brought into contact with the tomato juice.

## Part II

## THE DRIED FRUIT AND VEGETABLE INDUSTRY

### INTRODUCTION

The drying of fruits and vegetables has been known for hundreds of years and is probably one of the earliest methods adopted by the human race for the preservation of food. In this country apples and other fruits, fish, peas, beef and buffalo meat were at one time preserved in this manner. Approximately one hundred years ago the process of canning was introduced into America and this method was seen to be so simple and so applicable to many kinds of food materials that it apparently completely overshadowed for a number of years the former process of drying.

### VARIETIES

The dried fruit industry of the Dominion is based almost entirely on apples. In the trade dried apples are divided into three classes: sun-dried apples, the product of the home drier; evaporated apples, the product of the commercial evaporator in which artificial heat is employed; and the dehydrated product, in which the apple is artificially dried with an apparatus using temperature, humidity and air-velocity control.

### ADVANTAGES

The outstanding advantage of drying as a method of preserving foods is that weight and bulk are greatly reduced, resulting in economy in storage and transportation. This saving will become more significant as the need in Canada for the stabilization of crops and the conservation of materials is more fully recognized. By drying fruits and vegetables in years of great yield stocks can be stored and

made available in the following year when prices are usually higher and crops smaller. After a short time such procedure would tend to regulate planting and, other things being equal, to make available year by year a sufficient quantity of food materials at normal prices.

## PRODUCTION

According to the Dominion Bureau of Statistics, the value of production of 26 evaporating and dehydration plants, together with that of a number of plants also engaged in the canning or preserving industries and in the manufacture of vinegars, pickles and sauces was:

| | Apples<br>$ | Apple Chops & Waste<br>$ | Total<br>$ |
|---|---|---|---|
| 1926 | 310,431 | 16,024 | 326,455 |
| 1927 | 317,587 | 32,371 | 349,958 |
| 1928 | 309,039 | 36,583 | 345,622 |

## IMPORTS AND EXPORTS

### Imports

| Fruits | 1927<br>$ | 1928<br>$ | 1929<br>$ |
|---|---|---|---|
| Apples, dried | 25,320 | 44,123 | 63,405 |
| Apricots, dried | 127,365 | 229,804 | 203,933 |
| Peaches, dried | 141,774 | 225,422 | 180,082 |
| Prunes & dried plums, unpitted | 1,067,134 | 1,211,632 | 1,367,666 |
| All other dried fruits (exclusive of bananas, currants, dates, figs & raisins) | 88,534 | 106,651 | 99,588 |
| **Vegetables** | | | |
| Potatoes, dried, desiccated or otherwise prepared.......... | 5,786 | 5,118 | 10,515 |
| Vegetables, dried | -- | -- | -- |

### Exports

| Fruits | 1927<br>$ | 1928<br>$ | 1929<br>$ |
|---|---|---|---|
| Apples, dried | 144,897 | 97,519 | 175,246 |
| Apricots, dried | -- | -- | -- |
| Peaches, dried | -- | -- | -- |
| Prunes & dried plums, unpitted | -- | -- | -- |

| Fruits | 1927<br>$ | 1928<br>$ | 1929<br>$ |
|---|---|---|---|
| All other dried fruits (exclusive of bananas, currants, dates, figs & raisins) | 10,763 | 2,045 | 1,481 |
| **Vegetables** | | | |
| Potatoes, dried, desiccated or otherwise prepared................ | -- | -- | -- |
| Vegetables, dried | 139 | -- | 155 |

Practically all the imports came from the United States. Germany took 72 per cent, the Netherlands 10 per cent and the United Kingdom 9 per cent of the exports of dried apples.

## CANADIAN CUSTOMS TARIFFS

The duties on imports of dried fruits and vegetables as in effect on October 1, 1930, are as follows:

| Tariff Item | Vegetables | Rates<br>Brit. Pref. | Inter. | General |
|---|---|---|---|---|
| 83 | Potatoes:<br>(b) dried, desiccated, or dehydrated per pound. | free | free | 2¾c. |
| 90 | Vegetables, prepared or preserved:<br>(a) dried, desiccated or dehydrated, including vegetable flour, n.o.p. | 15 p.c. | 27½ p.c. | 30 p.c. |
| | **Fruits** | | | |
| 99a | Figs, dried: plums, prunes and dates, dried, unpitted, per pound. | free | 2/3 ¢ | 2/3 ¢ |
| 99b | Fruits, dried, desiccated, evaporated or dehydrated, n.o.p. | free | 22½ p.c. | 25 p.c. |

## MARKETS

As complete production figures are not available, it is impossible to estimate the extent of the domestic market for dried apples which, as has already been stated, is practically the only Canadian dried product of this industry.

The demand is small in proportion to the population and is mostly from the Prairie Provinces. The explanation for this very limited demand in a country where fresh and canned apples are so popular and where other dried fruits are being imported in increasing quantities lies in the poor quality of the product. As only low grade fruit is used in many evaporators and different varieties of apples are processed together, the result is a product which cannot compete in quality or appearance. It is believed that dried apples made from high grade raw materials of one variety would find a good market in Canada.

Prunes, dried peaches and dried apricots are being imported in increasing quantities and experiments conducted by the federal Dehydration Committee in British Columbia a few years ago to determine the suitability of these and other fresh fruits for dehydration purposes were very encouraging.

As the domestic demand for dried vegetables is very small the production is negligible and there are no imports, other than "Potatoes, dried, desiccated or otherwise prepared", the imports of which have risen in value from $5,786 to $10,515 in the past two years.

The foreign markets for these products are covered in the foreign market section of this report.

## THE EVAPORATOR

### Description of Plants

It was probably in 1882 that the first apple evaporator was started in Canada. In 1917 there were about 175 establishments in operation, but this number has since greatly decreased. The plants in operation at present, numbering approximately 70, are situated in southern Ontario and in the Annapolis district of Nova Scotia. Apples are

the sole products of these plants.with the exception of the one at Belleville, Ontario, which is operated in conjunction with the dehydration plant there and evaporates apples, cabbage, celery, julienne (a vegetable mixture) and potatoes. The apple evaporating season does not begin until about October 1st, and is usually over by the end of December in Ontario, while the Nova Scotia evaporators are operated throughout the winter.

The by-products are chops and waste. Chops are the small irregular, or otherwise defective apples which, after a partial processing, are packed in barrels for use in the manufacture of vinegars and cheap wines. The skins and cores of the apple are known as waste, a product rich in pectin and valuable in the manufacture of jams.

## Types of Driers

Many types of evaporators are in use but practically all the Canadian establishments use either the "tower" or "kiln" system. There are two kinds of tower evaporators, the hot air, and the steam dryer. The hot air tower is a tall, narrow brick building, the fruit being dried on rows of trays. With the steam dryer the fruit is also dried on trays but the heat is controlled by a system of steam pipes. Kiln-driers are of various sizes and shapes, as many have been constructed out of what were formerly schools, churches, factories or other buildings, but in designing a building for a modern evaporator the size of kiln --20 feet by 20 feet--is found to be the most satisfactory. On the ground floor is situated the furnace or other heating apparatus while above is the drying floor which resembles a large stationary rack covering the entire surface of the room. The fruit is first spread evenly over the surface of the floor, then warm air followed by hot air is applied and the

fruit turned from time to time with a flat shovel, the number of turnings varying with the depth of fruit on the drying floor.

## The Evaporating Process

The equipment of an evaporator consists of tables, paring machine, bleacher, shears, presses and sundry smaller articles. When motor power is used a motor elevator and shafting will be needed. After having been cored and pared the fruit enters the bleacher where it is subjected to the action of sulphur fumes for a short time. This process is employed not only to make the fruit white where the freshly-cut surfaces have been discoloured by contact with the air but to prevent further discoloration after it has been sliced. Sulphuring also renders the fruit more readily permeable to moisture and consequently accelerates the drying; at the same time acting as a deterrent to insects which otherwise might deposit their eggs while the fruit is drying or in storage. The fruit is now sliced and placed in the drier, the various types of which have already been described. On the completion of this process it is taken to the curing room where it is turned each day for a few days and then packed in boxes for shipment. Evaporated apples are usually packed in wooden boxes containing either 50 or 25 pounds net. Pasteboard cartons holding about 3 pounds are sometimes used, and packed in wooden boxes containing from one to three dozen cartons.

## DEHYDRATION

## Description of Plants

There are but four commercial dehydration plants in Canada, one at Vernon, British Columbia, another at Belleville, Ontario and one each at Aylesford and Port Williams in

Nova Scotia. The latter two dehydrate apples only while the Ontario and British Columbia plants produce, in addition, various kinds of vegetables.

## Superior to Evaporation

Dehydration is a more scientific and more efficient method of drying fruits and vegetables than evaporation. Under the Meat and Canned Foods Act evaporated fruits and vegetables are defined as "desiccated with employment of artificial heat" and dehydrated fruits and vegetables as "artificially dried with an apparatus using temperature, humidity and air-velocity control." The dehydrated product retains the natural flavour to a much greater degree than the evaporated and, when properly soaked, refreshes almost to the original weight whereas the evaporated product shows a shortage of 20 per cent under similar treatment.

## The Dehydration Process

The process of preparing the raw material for the dehydrator or evaporator such as peeling, slicing and bleaching is more or less the same in each case as also is the subsequent sweating or curing.

The essential difference between the two processes lies in the method of extracting the moisture. In evaporation the air is pre-heated, used once and allowed to escape, while in dehydration the air-current is re-circulated by fans, the humidity of the air being regulated by the operation of certain openings, one of which allows the moisture-saturated air to escape while the other admits fresh air at proper intervals.

## The Dehydration Committee

In 1923 the Dehydration Committee was appointed by the federal Government to investigate the decline of the dried fruit industry in Canada and the possibilities of dehydration. The secretary of this committee visited California, Washington and Oregon to study the methods in use there. He also secured a complete dehydration plant which was shipped to Penticton in British Columbia. Experiments were carried on for a number of years with this plant, with another at Grimsby, Ontario, and with a laboratory plant at Ottawa. In 1927 a report of the result of this work was issued, a brief summary of which follows:

1. It is impossible for a dehydrator to make a good product from low-grade fresh fruit.
2. The hope for permanency and prosperity in the Canadian dried-fruit industry lies in creating a greater confidence therein by both the domestic and foreign trade, and by emphasizing high quality. This can be done perhaps more effectively through the dehydration than through the evaporation process. A reduction in costs is equally important. A dehydration plant, once established, can operate at a lower cost per ton of dried fruit than an evaporator.
3. The fruit growers themselves must carefully consider the matter of their plantations in relationship to dehydration. It is impossible to expect a trade to be developed on an insecure supply of a large number of varieties. Hence, fruit plantations must be somewhat remodelled with that end in view.
4. Dehydrated fruit must be considered the primary fruit product and not a by-product.
5. It would be wise for those considering plantations for dehydration purposes to carefully consider the relationship between the dried fruit industry and other phases of the fruit industry. It is often advisable for the dehydration plant to be operated under the same company or in close co-operation with the fresh fruit warehousing companies and the concerns making canned products, cider, fruit juice, jams and jellies.
6. There still remains considerable work to be done to determine for classification purposes the suitability of uniformly good grades of the different varieties of fruits and vegetables.

## GOVERNMENT SUPERVISION

The Canadian dried fruit and vegetable industry is supervised by the federal Department of Agriculture under the provisions of the Meat and Canned Foods Act and the regulations are similar to those applying to canned fruits and vegetables, the grading of the products being determined by freedom from pieces of skin and core, uniformity of size and colour, and general condition.

# PART III.

## * INFORMATION ON VARIOUS FOREIGN MARKETS

### United Kingdom

The United Kingdom imports immense quantities of canned and preserved fruits and vegetables. The canning industry, however, is being rapidly developed and, in addition, fresh fruits and vegetables are now available during the greater part of the year. Trade statistics show that the United Kingdom is the United States' best foreign market for canned foods. The value of the 1928 imports of processed fruits and vegetables from all countries and the extent to which Canada shared in this market are given below.

| | Total Imports | Imports from Canada |
|---|---|---|
| | $ | $ |
| Fruit preserved without sugar | 2,404,517 | 36,169 |
| Fruit preserved in sugar (other than pineapple) | 23,778,075 | 275,755 |
| Marmalade and fruit jellies | 48,598 | not shown separately |
| Grape juice .............. | 360,211 | " " " |
| Apple juice .............. | 301,645 | 113,655 |
| Tomatoes .................. | 4,009,023 | not shown separately |
| Vegetables (other than tomatoes)............... | 1,488,917 | 31,565 |
| Vegetables, dried ......... | 51,572 | not shown separately |
| Pickles and vegetables, preserved, in salt or vinegar | 1,081,241 | " " " |

Imports of dried apples are not available but Canada secures only a small share of this trade as the quality and appearance of the American product are favoured. Competition is keen in all lines not only from the American but also from the continental canners as the market is an open one. Canadian products enjoying the largest sale at present are canned pears, canned beans and concentrated cider juice, while others presenting good opportunities are tomato catsup and jam pulp.

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* Through the kind co-operation of the Commercial Intelligence Service, Department of Trade and Commerce.

In Scotland and Northern Ireland, as in England, the prejudice against tinned foods has to a great extent passed away and the consumption is increasing yearly. Canadian canned fruits already on sale in Scotland and to a more limited extent in Northern Ireland are apples, apricots, loganberries, peaches and pears. There is also a good or increasing sale for the following canned vegetables packed in the Dominion:- asparagus, baked beans, green or wax beans, beets, corn, peas, tomatoes and spinach. A market exists in Scotland for fruit pulp, strawberries treated with sulphur dioxide offering the best opening at present.

The opportunity of realizing on the increasing consumption of canned foods and the desire of the people of the United Kingdom to purchase Empire goods would seem to lie in the shipping of a steady supply of quality products bearing a national mark or name indicating the Canadian origin of the article.

## Newfoundland

This country constitutes one of Canada's principal markets for canned vegetables taking in 1929 beans valued at $29,893, tomatoes -$8,544, other vegetables -$11,807 in addition to pickles, catsup and sauces -$19,099. As both the climate and soil of Newfoundland are unfavourable for most crops little attention is given to agriculture and most of the imports are foodstuffs. The tariffs are high and Canadian goods have not as yet any preference over those of the United States.

## New Zealand

The use of canned goods is showing considerable growth and where prices are competitive, or quality outstanding, there is a satisfactory demand for imported products. The

public taste is for lines similar to those used in England.

Canned fruit and vegetable imports from Canada include pears and other unspecified fruits, baked beans, corn and peas. Jams and preserves are supplied by South Africa, United Kingdom, France and China. Pickles and sauces are largely made locally or imported from the United Kingdom, although Canada furnishes a world renowned brand of tomato ketchup. Fruit juices for the soda fountain trade, and dried apples are other Canadian products enjoying a good sale here.

### Irish Free State

The Irish Free State is becoming an increasingly important consumer of canned goods of all varieties. Vegetables are marketed fresh during the greater portion of the year but fresh fruit is, in all seasons, scarce and expensive. Small fruits such as berries thrive but the larger fruits such as apples, peaches and melons are grown only in comparatively small quantities. Production is practically confined to jam and large quantities are exported. The 1928 imports of fruits in syrups were valued at $342,000, preserved vegetables -$97,500, pickles and sauces -$25,413, and fruit pulp and juices -$151,869. The only recorded imports from Canada were fruit pulp and juices valued at $6,424.

### Australia

The entry into Australia of most processed fruits and vegetables is prohibited for an unspecified period from April 4, 1930. The duties in normal times are high and Canadian goods are subject to the general rate. A market for canned corn and soups was being steadily developed and when importations are resumed Australian importers anticipate

increased business. During the year ended June 30, 1929, Canada supplied canned vegetables valued at $4,657 and fruit syrups and juices, the importation of which is still permitted, with a value of $9,305. The total Australian imports of these products were valued at $25,647 and $58,716 respectively.

## Jamaica

As fresh fruits and vegetables grow in great profusion in Jamaica and the standards of living are low, importation of the processed goods are really a luxury. Canned fruits, jams and jellies are grouped in the Jamaica official statistics and show that the 1928 imports were valued at $43,537 with Canada sharing to the extent of $622. The chief kinds of imported canned fruits are apricots, cherries, peaches and pears, most of which are supplied by the United States, while the trade in jams, jellies, and preserves is controlled by the United Kingdom. The demand is for canned fruit of standard grades in Nos. 2½ and No. 1 cans. Canned, dried and preserved vegetables valued at $10,594 were also imported, with the United States also supplying the greater proportion. Imports from Canada were valued at $262. Among the vegetables peas take the first place in quantity followed by baked beans, tomatoes, corn and asparagus. Imports of dried fruits and vegetables are very small.

## South Africa

Competition in the majority of these lines is fairly severe from the United States as well as from Italy and other continental countries. The main types of canned vegetables imported are corn-on-cob, peas, spinach and tomatoes. The opportunities for Canada to enter the canned fruit market would appear to be in small acid fruits such as

berries and cherries. In the year ending March 31, 1929, imports from Canada of canned fruits were valued at $542 and canned vegetables at $22,825. South Africa also offers a potential market for fruit pulp, imports of which were valued at $83,057 in 1928 and were supplied by Australia and Holland.

## India

The demand for canned or otherwise preserved fruits and vegetables is confined to the European population and a number of wealthy Indians, and is supplied from sources outside the country. Fresh fruits and vegetables are available the year round at very reasonable prices. While canned fruits are being imported in increasing quantities, it is not thought that canned vegetables will ever compete to any great extent with the fresh product. California packers have by far the largest share of the market and are well established but Canadian canned fruits might be successfully introduced as the European population is practically all British and Empire products would no doubt be given the preference if they can compete in price and quality.

## Hongkong

There is no tariff on processed fruits and vegetables entering Hongkong and many large American firms are well established there and practically control the trade. Canadian canned tomatoes have occasionally been sold in Hongkong and trade in this commodity might be developed if the product can be sold at competitive prices. A good opportunity exists for jam in tins bearing large and attractive labels.

## China

At present the market in China is restricted to the foreign population and the wealthier Chinese. The trade in

canned fruits and vegetables is dominated by a number of large American firms while jams, jellies and preserves are also supplied by Australia and the United Kingdom. The demand for canned fruits is much greater than for canned vegetables. Canada's exports to China at present consist of small quantities of jams, jellies and preserves. The Chinese population present a large potential market which might be developed by the putting up of canned fruits, jams, jellies and preserves in small containers with the labels and advertising in Chinese. On the other hand it is not believed that there will ever be any appreciable demand for dried fruits or vegetables in that country.

Japan

Canada exported to Japan in 1929 canned fruits valued at $147 and canned vegetables, valued at $32, a very small fraction of the processed fruits and vegetables entering that country. Through extensive advertising certain American brands are well known and enjoy a considerable sale. Efforts have been made to introduce Canadian goods but prices were not competitive and the manufacturers were not prepared to advertise their goods. The fact that Canadian goods are selling there, even though in a very small way, would suggest that the market might be worth investigation especially as the consumption of canned goods in the Orient is increasing. It might also be stated that no demand exists for dried fruits or vegetables.

Netherlands East Indies

There is a limited demand for canned fruit from the European population and the better class of Chinese. Competition is exceptionally keen with the greater part of the market being in the hands of a number of large American

firms. One of the drawbacks to successfully establishing Canadian canned fruits and vegetables in this country is that most of the importers want a complete line and this, of course, Canada is not in a position to offer.

### Argentine Republic

Generally speaking, there is no market for the Canadian product in the Argentine on account of the extensive season of growth there, high duties and keen competition among the local canners. A limited demand for catsups, sauces and pickles is supplied by certain extensively advertised and well established British and United States firms.

### Brazil

Notwithstanding the heavy duties prevailing, imported canned fruits enjoy a good sale among the wealthy Brazilians and the foreign population. Cherries, peaches, and pears are the fruits sold and certain American brands are the best known. Markets for the remaining products are very small.

### Colombia

Consumption is confined chiefly to the coastal cities as an abundant supply of fresh fruits and vegetables and the high cost of inland transportation militate against any appreciable inland market. Peaches, pears, cherries and apricots are the most popular of the canned fruits while asparagus, peas, beans, corn and tomatoes sell best among the vegetables. The United States predominates in the trade in both canned fruits and vegetables. Great Britain competes mainly in marmalades and jellies, and France in peas. In sauces and relishes one well known English firm is well established. In the year ended March 31, 1929, Canada's exports to this country included canned and preserved fruits

valued at $130; canned tomatoes $260 and other canned or preserved vegetables $1,199; pickles, sauces and catsups -$59.

Cuba

Previous to 1927, a very good demand existed for canned foodstuffs but since then heavy import duties, increased local production, and diminished purchasing power, all recently occasioned by the continued and unprecedented slump of the sugar market, which represents over 80 per cent of Cuba's export trade, have changed conditions entirely. As far as canned fruits are concerned, this is strictly a luxury trade and it is estimated that the imports, most of which are from the United States and the balance from Spain and France, have decreased by two-thirds in the past two years. Most of the vegetables common to Canada are grown and marketed fresh for a large part of the year, thus limiting the opening for the canned product. The United States supplies the bulk of the demand and the products of that country enter under more favourable rates than those accorded to Canada. The imports for the year ended March 31, 1927, of canned vegetables from the Dominion were valued at $22,753 but are now negligible.

Mexico

All varieties of canned fruits are in demand in Mexico, particularly those from the United States. No effort has been made to introduce Canadian brands, but it is probable that these would meet with a ready sale if prices were attractive. The market is, of course, practically restricted to the foreign population and the tariffs are quite high. As in the case of other tropical countries, fresh vegetables are available for practically the entire year and this would limit the market for the preserved product.

United States

The United States is a great manufacturer and exporter of all kinds of canned foods. The home market is sufficiently protected that the opportunities for building up a steady market for Canadian products there are practically non-existent, only an occasional opening occurring as was the case in 1929 when there was a short crop of tomatoes in that country. Canada's exports to the United States during the calendar year 1929 were as follows:-

| | Value<br>$ |
|---|---|
| Canned and preserved fruits | 13,682 |
| Jams, jellies and preserves | 1,826 |
| Cider | 5,704 |
| Fruit juices and syrups | 2,064 |
| Pickles, sauces and catsups | 20,023 |
| Canned tomatoes | 614,036 |
| Other canned vegetables | 1,266 |

Venezuela

Sales of canned fruits and vegetables are confined to a small percentage of the population, because the purchasing power of the majority is limited though increasing, and fresh fruits and vegetables are available practically the year round. Caracas, the capital, and Maracaibo with its large foreign population are the principal consuming centres. Total imports in 1928 of fruits in their own juice or syrup were valued at $105,769, canned vegetables $75,823, pickles $46,693 and sauces $27,519. These imports have varied considerably in the past two years, increasing in 1927 and declining in 1928 to below those of 1926. The United States has the greater portion of the trade, the principal canned fruits exported by that country to Venezuela being peaches, pears, prunes, pineapples, cherries, apricots, apples and berries. Among the vegetables asparagus is in greatest demand, followed by peas, tomatoes, beans and corn. There are no tariff preferences as regards imported goods.

## France

As this country is a great exporter of canned vegetables, and fresh fruit is available in all seasons at small cost, Canada's opportunities for entering the market would only arise when France experienced bad crops, as in 1927 when one firm alone imported from the Dominion 10,000 cases of green peas. A good opening always exists for dried apples especially so if the cider apple crop is below normal. The quality in greatest demand is the second grade but there is also a demand for the first grade which is used largely by confectioners. Canada, by virtue of a trade treaty, enjoys the benefits of the minimum tariff rate and the exports to France of canned vegetables during the calendar years 1928 and 1929 were valued at $46,280 and $2,522 respectively.

## Germany

The opportunities in this country for Canadian canned fruits and vegetables are very restricted on account of the high tariff rates in force. Canada has no commercial treaty with Germany and the tariff on canned fruits and vegetables, pickles, sauces, etc., is higher than that enjoyed by such countries as the United States. The only product of interest is evaporated apples on which the duty is the same for all countries. Germany is Canada's largest foreign market for this product, the value of the imports from the Dominion being $61,989 in the calendar year 1928 and $125,930 in 1929.

## Greece

A study of the imports and exports shows that Greece is a fairly large exporter to many countries and, while appreciable quantities are also imported, very little, if any, came from the Dominion. Practically all the Canadian

varieties of fruits and vegetables are grown here and the canning process is more or less that employed in the United States and Canada but the quality of the product is inferior in colour and taste. The sale of the Canadian product is no doubt hindered by the absence of a trade agreement with Greece.

## Holland

Holland is an important fruit and vegetable growing country and has well developed preserving industries. Over 50 per cent of the home production is exported. About 90 per cent of the trade of imported canned fruit, the consumption of which is increasing steadily, is controlled by the United States. California canned fruits have met with great favour because of their quality and low price. In 1928 Canada's exports to Holland were confined to dried apples valued at $43,109 out of a total of $475,200 and fruit juices, principally of the unsweetened variety, valued at $5,600 out of a total value of $25,600.

## Italy

This country is a great producer and exporter of many kinds of processed fruits and vegetables, and the importation of foodstuffs is discouraged. On account of these two factors, it is not believed that there would be any large market available for Canadian products.

## Norway

The northern location of Norway does not permit sufficient production to provide for a diet on the same scale as Canada, consequently there is a tendency to regard such foods almost as luxuries and heavy import duties are levied. Two well known United States brands enjoy the bulk

of the growing demand for canned fruits and vegetables. Pineapples, peaches, and pears are the most popular fruits and white asparagus is the largest seller in the vegetable group. There is no opening for canned apples, and canned tomatoes are not yet fully appreciated. Probably on account of the high duty, soup extracts and concentrates are more popular than soup as ordinarily packed.

### Spain

As Spain exported in 1928 enormous quantities of preserved vegetables to 31 countries, including Canada, and of preserved fruits to 17 countries, it would not appear that any openings exist there for Canadian products of this nature. Among the imports of canned vegetables, which are but a fraction of the exports, Great Britain is listed as the country of origin of 4,905 kilograms (10791 lbs.) but it is possible that some of these were products of the Dominion.

## LICENSED FRUIT AND VEGETABLE CANNING, PRESERVING AND DRYING PLANTS
## 1929

### Index to Symbols

**Note:** All fruits and vegetables have not been shown by symbols, but only those that are products of a number of plants or localities.

#### Fruits - "F"

Canned

1 apples
2 blueberries
3 blackberries
4 cherries
5 loganberries
6 peaches
7 pears
8 plums
9 raspberries
10 rhubarb
11 strawberries

Dehydrated

12 apples

Evaporated

13 apples

Preserved

14 jams
15 jellies
16 marmalades

Other Fruit Products

17 syrups and fruit juices
18 fruits, glacé
19 apple pie filler
20 cider

#### Vegetables "V"

Canned

1 asparagus
2 beans, baked
3 beans, green or wax
4 beets
5 carrots
6 corn
7 peas
8 pumpkin
9 spinach
10 tomatoes
11 Dehydrated
12 Evaporated

Catsups, pickles, etc.

13 catsups, sauces, and relishes
14 pickles

*- not operating 1929.
X- Head Office 44 Hughson St., E., Hamilton, Ontario.

| No. on Map | Location | Company | Products |
|---|---|---|---|
| | | **British Columbia** | |
| 1 | Armstrong | McDonald & Co. & | F 14 |
| 2 | Ashcroft | Ashcroft Canners Ltd. (H.O. Dom. Canners, Vancouver) | V 8,10 |
| 3 | Brilliant | Kootenay Columbia Pres. Wks. | F 14, V 10 |
| 4 | Burnaby | Stanley Pure Preserves Co. | F 14,16 |
| 5 | Cawston | Cawston Fruit & Can. Co-op. Association | V 10 |
| 6 | Eburne | MacKinnon Canning Co. Ltd. | F 1,7,10,14, apricots;<br>V 3,10,13. |
| 7 | Gibsons Landing | Howe Sound Co-op. Can. Assoc. | F 3,8,9,11,14, black currants, gooseberries. |
| 8 | Grand Forks | Kootenay Columbia Pres. Wks. | V 10 |
| 9 | Kamloops | Kamloops Cannery | V 6,10 |
| 10 | Kelowna | Bulmans, Ltd.* (H.O. Vernon) | |
| | | Dominion Canners, B.C. Ltd. (H.O. Vancouver) | F 1; V 10,13 |
| | | Occidental Fruit Co. Ltd. | F 1,4; V 8,10 |
| | | Rowcliffe Canning Co. Ltd. | F 4,8, Italian Prunes;<br>V 3,8,10 |
| 11 | Keremeos | Dominion Canners, B.C. Ltd. (H.O. Vancouver) | V 10 |
| | | Keremeos Packing Co. Ltd. (H.O. 543 Granville St. Vancouver) | F 4,6,7,8; V 6,10 |

| No. on Map. | Location | Company | Products |
|---|---|---|---|
| | | British Columbia (cont'd). | |
| 12 | Lake Hill | Cedar Hill Canning Co. | F 3,4,5,8,9,11; V 3 |
| 13 | Mission City | Empress Mfg. Co. Ltd. | F 14, jam, pulp |
| | | Farmers Canning Co. Ltd. (H.O.Dom.Canners,Vancouver) | F 1,2,4,6-9,11,14-16; V 3,8-10 |
| 14 | Nelson | McDonald Jam Co. Ltd. | F 14,15 |
| 15 | New Westminster | Broder Canning Co. Ltd. | F 1-9,11,apricots, gooseberries,14,16; V 2-10,13 |
| 16 | Oliver | Dominion Canners,B.C.Ltd. (H.O. Vancouver) | V 10 |
| 17 | Penticton | Dominion Canners,B.C.Ltd. (H.O. Vancouver) | F 1(crab)4,6-8,apricots |
| | | Spiller, Louise, M. | F 4,6, apricots |
| 18 | Port Haney | Berryland Fruit & Dairy Farms | F 8,9,11,14,apricots; V 3 |
| 19 | Rutland | Rutland Canners, Ltd. | V 10 |
| 20 | Sidney | Saanich Canning Co. Ltd. | F 3,5,7,9,11, pitted prunes |
| 21 | Vancouver | Dominion Canners B.C. Ltd. 332 Drake. | F 1,3-11,apricots, gooseberries,14-16. V 1-4,6-10,13,cabbage, cauliflower. |
| | | Empress Mfg.Co.Ltd.(1106 Homer) | F 14-16; V 13,14 |
| | | Haine, Mrs. Ltd. (2645 4th Ave.) | F 16 |
| | | Majestic Mfg. Co. Ltd. | F 14,16 |
| | | Slaney, C.B.(157 Water St.) | F 14-16 |
| | | Vancouver Pickle Co. (Granville Island) | V 13,14 |
| | | Walkers Marmalades (369 Kingsway) | F 1,4,7-9,pineapple, crabapples, 16,18,11 |
| 22 | Vernon | Bulman's Limited | F 1,8,12; V 3,8-10, (11 - onions, cabbage, carrots,celery,)13 |
| 23 | Victoria | Holsum Packing Co. Ltd. | F 1,4,8,7,11,14-16; V 3,7,9,10,13,14 |
| | | Alberta | |
| 1 | Calgary | Eamans Ltd.(614-17th Ave.W) | F 16 |
| 2 | Edmonton | Broder Canning Co.(Alberta) Ltd.(H.O.New Westminster) | V 2-4,7,9,10,13 |
| 3 | Medicine Hat | Broder Canning Co.(Alberta) Ltd.(H.O.New Westminster) | V 10 |
| | | Manitoba | |
| 1 | Winnipeg | Codville Co.Ltd.(51 Victoria) | V 14 |
| | | Dyson, David J.,Ltd.(Myrtle Avenue) | F 20; V 13,14 |
| | | Gillespie's Ltd. | F 14 |
| | | Kildonan Canning Co. (E. Kildonan) | V 3,4,7,9 |
| | | Reynolds Moore & Co.,Ltd. (109 Higgins Avenue) | F 20; V 13,14 |
| | | White Star Mfg.Co.Ltd. (Princess Street) | V 13,14 |

| No. on Map. | Location | Company | Products |
|---|---|---|---|
| | | Ontario | |
| 1 | Alfred | Bissonnette, Jos. | F 9; V 3,4,6,8,10 |
| | | Charbonneau, Jean | F 1; V 3,6,10 |
| | | Charbonneau, Leon | V 3,5,6,10 |
| | | Lamarche, Albert | F 9-11; V 3,6,8,10 |
| | | Lamarche, Mathias | F 9-11; V 3,6,8,10 |
| | | Laniel, Rev. Pere | F 1; V 3,5,6,10 |
| | | Larivière, Mde. Emilie | F 1,10; V 3,5,6,8,10 |
| | | Rouleau, Oscar | F 1,2,9,10; V 3,6,8,10 |
| 2 | Alvinston | Canadian Canners Ltd.x | V 6 |
| 3 | Amherstburg | Canadian Canners Ltd.x | V 10 |
| 4 | Arkona | Town & Case (H.O.Shedford) | F 13 |
| 5 | Auburn | Asquith, A. & Son | F 13 |
| 6 | Aylmer West | Canadian Canners Ltd.x | F 1; V 6,7 |
| | | Porter, Alfred | F 13 |
| 7 | Beamsville | Bowron Bros.,Ltd. (H.O. 105-7 Victoria Ave. N.) Hamilton | F 4; V 14 |
| | | Canadian Canners Ltd.x | V 10 |
| 8 | Belle River | Canadian Canners Ltd.x | V 10 |
| 9 | Belleville | Belleville Canners, Ltd. | V 6-8, 10 |
| | | Graham, R.J. | F 1,12,13; (V 11 beets carrots, onions, peas, potatoes, tomatoes, turnips), (12 cabbage, celery, julienne, potatoes) |
| 10 | Blenheim | Canadian Canners, Ltd.x | V 10 |
| 11 | Bloomfield | Associated Quality Canners Ltd. (H.O.159 Bay St.) Toronto | V 3,6-8,10 |
| | | Benson & Williams Canning Co. | V 10 |
| | | Bovay & Caughey Canning Co. | V 10 |
| | | Canadian Canners, Ltd.34x | V 6,7,10 |
| | | Canadian Canners, Ltd.35x | V 6,7,10 |
| | | Clark Bros. | F 13 |
| | | Leavens, Howard | F 13 |
| | | Orser Fruit Farms, S.R. | F 1,4; V 8,10 |
| | | Purtelle Canning Co., R.J. | V 10 |
| 12 | Blyth | Brown, Isaac | F 13 |
| 13 | Bourget | Delisle, Arthur | V 3,6,10 |
| | | Dicaire, Olida | V 3,6,10 |
| | | Paul, Pierre | V 3,6,10 |
| | | Potvin, Jules | V 3,6,10 |
| | | Schnupp, Patrick | V 3,6 |
| | | Thivierge, Maurice | V 3,6,10 |
| 14 | Bowmanville | Canadian Canners Ltd.x | V 6,7 |
| | | Holgate, John A. & Son | F 13 |
| 15 | Brampton | Linder Co.Ltd.(H.O.407 McGill St.) Montreal | F 1,4,6-9,11,14,15,20; V 3,8,10 |
| 16 | Brantford | Brantford Canning Co.,Ltd. | V 3,10 |
| 17 | Brighton | Canadian Canners Ltd.#2 x | F 1,13,20; V 10 |
| | | Canadian Canners Ltd.#255A x | V 10 |
| | | Doonan, Fred | V 10 |
| | | Nesbitt Canning Co., E.J. | V 7,10 |
| | | Spring Valley Canners, Ltd. (H.O.159 Bay St.,Toronto) | V 3,6,8,10 |
| | | West End Canning Company | V 10 |
| | | Whitehouse, J. | V 10 |

| No. on Map. | Location | Company<br>Ontario (cont'd). | Products |
|---|---|---|---|
| 18 | Burford | Canadian Canners Ltd. x | V 6,7 |
| 19 | Burlington | Canadian Canners Ltd. x | V 13 |
| | | Tip Top Canners Ltd. (H.O. Greensville) | F 4,7,10,14; V 10 |
| 20 | Cayuga | Crockett, J.M. | V 7,10 |
| 21 | Chatham | Canadian Canners Ltd. x | V 6 |
| | | Libby, McNeill & Libby Co. of Canada, Ltd. | V 2,10,13,14 |
| 22 | Cheney Station | Lefebvre, Wilfrid | F 9; V 3-6, 10 |
| 23 | Cherry Valley | Boulter & Colliver Canning Co. (H.O. Picton) | V 10 |
| | | Stark, H.R. | F 13 |
| 24 | Clarence | Henri, Emile | V 3,10 |
| | | Lavictoire, Alfred | V 3 |
| | | Viau, D. | V 3,6,10 |
| 25 | Clarence Creek | Lavictoire, Anthime | V 3,6,10 |
| 26 | Clarksburg | Haines, P. & Son | F 13 |
| 27 | Clinton | Town & Weeks (H.O. North Rose, New York) | F 13 |
| 28 | Cobourg | Canadian Canners Ltd.x | V 6,7 |
| | | Douglas Pectin Ltd. | Pectin |
| 29 | Colborne | Branscombe Canning Co. | V 10 |
| | | Canadian Canners Ltd.N x | V 10 |
| | | Orser Packing Co., The C. | V 10 |
| | | Peacock, J.W. | V 6, 10 |
| | | Robertson Packers Ltd. | V 3,6,10 |
| | | Snelgrove, E.W. | F 13 |
| 30 | Collingwood | Hamilton, W.L. | F 13 |
| | | Smart Bros. Ltd. | F 1,4,8-11,lawtonberries,V 3,8-10 |
| | | Vancise, J.H. | F 13 |
| 31 | Consecon | Asquith, A. & Son | F 13 |
| | | Consecon Canning Co. | V 10 |
| | | United Canners, Ltd. | V 7,10 |
| 32 | Cottam | Associated Quality Canners, Ltd.(H.O.159 Bay St.)Toronto | F 7,8,10; V 3-5,10, tomato pulp |
| 33 | Creemore | Vancise & Carpenter | F 13 |
| 34 | Cressy | Cressy Canning Co.(H.O. Picton) | V 10 |
| 35 | Curran | Chartrand, Geo. | F 11; V 3 |
| 36 | Currie's Crossing | Alyea, Arthur A | F 13 |
| 37 | Delaware | Blosdale, F. & Sons | F 13 |
| 38 | Delhi | Canadian Canners Ltd.x | V 1,3,6,8,squash |
| 39 | Deseronto | Associated Quality Canners Ltd.(H.O.159 Bay St. Toronto) | V 6-8, 10 |
| 40 | Dresden | Canadian Canners Ltd.x | V 10 |
| | | Mahler Bros. | F 13 |
| 41 | Dublin | Dublin Canning Company | V 6 |
| 42 | Dunnville | Canadian Canners Ltd.x | V 7,10 |
| 43 | Dutton | Clapp, A.D. | F 13 |
| 44 | Embro | Peacock, O.J. | F 13 |
| 45 | Embrun | Daze, D. | V 3,4,6,10 |
| | | Lapointe, J. | V 3,6,10 |
| | | Levac, D. | V 3,6,10 |
| 46 | Emo | Canadian Canners Ltd.x | V 7 |
| 47 | Essex | Associated Quality Canners Ltd.(H.O.159 Bay St. Toronto) | V 6-9 |

| No. on Map. | Location | Company | Products |
|---|---|---|---|
| | | Ontario (cont'd). | |
| 48 | Exeter | Canadian Canners Ltd.x | V 6,7 |
| | | Clapp, A.D.★ | F 13 |
| 49 | Fingal | Davis, W.H.. | F 13 |
| 50 | Fonthill | Canadian Canners Ltd.x | F 4,6-9,11; V 10 |
| | | Daboll, J.A. & Son | F 1,4,6-9,11;V 1,3, 9,10 |
| 51 | Forest | Canadian Canners Ltd.x | F 1; V 6,7, |
| | | Mahler Bros.★ (H.O.Dresden) | F 13 |
| 52 | Foxboro | Gay,S.C. | F 13 |
| 53 | Frankford | Canadian Canners Ltd.x | V 6,7 |
| | | Graham, R.J.(H.O.Belleville) | F 13 |
| 54 | Glenora | Glenora Canning Company | F 1; V 3,8,10 |
| 55 | Glen Sandfield | Lacombe, A. | V 3,6 |
| | | Sabourin, F. | V 3,6,10 |
| 56 | Glen William | Glen Company Ltd. | F 19 |
| 57 | Goderich | Huron Can.& Evap.Co.Ltd. | V 6,8,10 |
| 58 | Grafton | Canadian Canners Ltd.x | V 10 |
| 59 | Greensville | Tip Top Canners Ltd. | V 3,6,7,10 |
| 60 | Green Valley | Ouimet, Emery | V 3,6,10 |
| 61 | Grimsby | Canadian Canners Ltd.x | F 4,6-9; V 3,9,10 |
| | | Grimsby Pickle Company | V 14 |
| | | Supreme Canners Ltd. | F 1,6-9; V 3,10 |
| 62 | Hamilton | Associated Quality Canners Ltd., 958 Barton E. (H.O.Toronto) | F 11; V 1,4,6,7,10 |
| | | Canadian Canners Ltd.(Hughson St.S.) | F 1,4,6-9,11; V 3,10 |
| | | Upton,T.,Co.Ltd.(Delaware) | F 14-16; V 13 |
| | | Wagstaffe,Ltd.(Maple) | F 14,16 |
| 63 | Harrow | Associated Quality Canners Ltd.(H.O.159 Bay St.) Toronto | V 6,7,9 |
| | | Clark Wm.Ltd.(H.O. 955 Amherst St.Montreal) | V 10,13,onions |
| 64 | Hensall | Cantelon,D.A. ★ | F 13 |
| 65 | Highgate | Canadian Canners Ltd.★ x | V 6,7 |
| 66 | Hillier | Canadian Canners Ltd.x | V 10 |
| 67 | Ingersoll | Robinson,C.E.& Company | F 13 |
| 68 | Jordan Station | Canadian Canners Ltd.x | F 4,6-9,11; V 10 |
| 69 | Kilbride | Tillier & Fox | F 13 |
| 70 | Lakeport | Canadian Canners Ltd.x | V 3,7,8,10 |
| 71 | Leamington | Heinz,H.J.Co.,Ltd. (H.O.Pittsburgh,Pa) | V 2,13,14 |
| 72 | Limoges | Asselin, Alfred | V 3,6,10 |
| | | Belisle, Louis | V 3,6,10 |
| | | Bellefeuille, L. | V 3,6,10 |
| | | Dennis, Henry | V 3,6,10 |
| | | Forget, Ferier | V 3,6,10 |
| | | Gagnon, Isaie | V 3,4,6 |
| | | Guibord, Onesime | F 1; V 3-8,10 |
| | | Ladouceur, J.D. | V 3,6,10 |
| | | Lajeunesse, C.L. | V 3,6,10 |
| | | Lamadeleine, Jos. | V 3,6,10 |
| | | Leduc, Osias | V 3,6,10 |
| | | Moise, Elie | V 3,6,10 |
| | | Prudhomme, Jos. | V 3,6,10 |
| | | Racette, Emeryl | V 3,6,10 |
| | | Rheaume, Arthur | F 1,2,9,14,15;<br>V 3,6,8,10 |
| | | Ritchie, Alfred | V 3,6,10 |

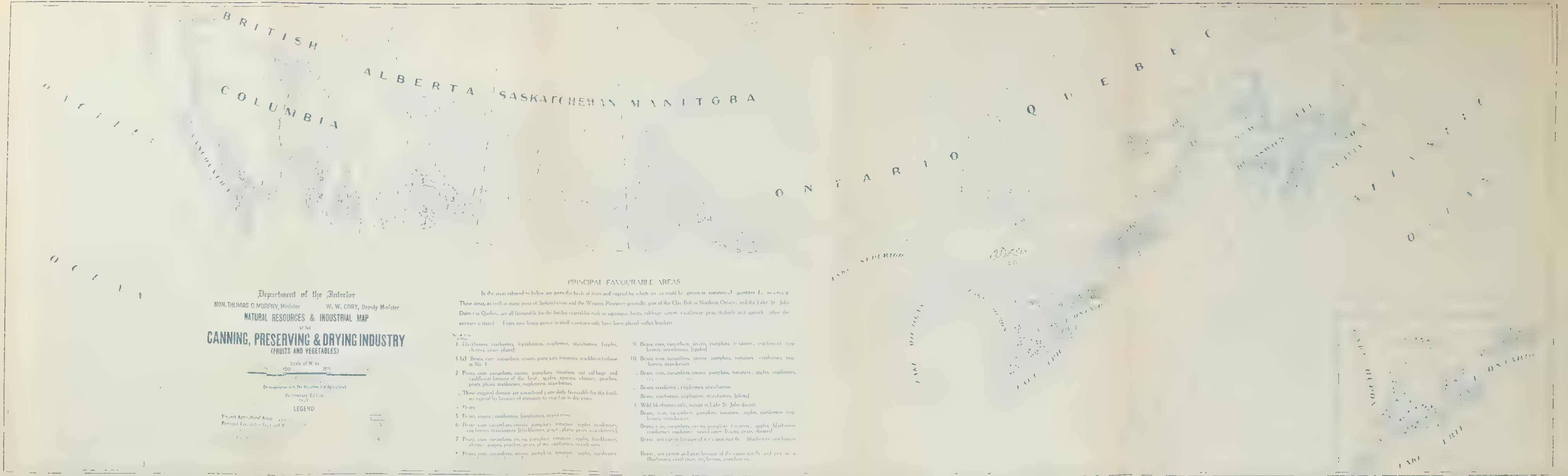
| No. on Map. | Location | Company<br>Ontario (cont'd). | Products |
|---|---|---|---|
| 73 | Loiselleville | Canadian Canners Ltd. ★ x | |
| 74 | Lucknow | Joynt, J.W. | F 13 |
| 75 | Marionville | Robert, Rev.Pere | F 1; V 3,6,10 |
| 76 | Martintown | Dupuis, F. | V 3,6,10 |
| | | Dupuis, W. | V 3,6 |
| 77 | McGregor | Associated Quality Canners Ltd.(H.O.159 Bay St.) Toronto | V 3,10 |
| 78 | Meaford | Town & Case (H.O.Thedford) | F 13 |
| 79 | Mitchell | Mitchell Evaporator | F 13 |
| 80 | Mountain View | Sprague, J.G. & Sons | V 10 |
| 81 | Mt.Brydges | Sinclair, A.B. ★ | F 13 |
| 82 | Mt.Dennis | Bettys Limited | F 14-16,19 |
| 83 | Napanee | Canadian Canners Ltd. x | V 6,7,10 |
| 84 | Neustadt | Schaus, W.V. ★ | F 13,20 |
| 85 | New Liskeard | Northern Canning Co. (H.O.159 Bay St. Toronto) | F 2; V 7 |
| 86 | Niagara Falls | Ellis Canning Company | F 7; V 10 |
| 87 | Niagara-on-the Lake | Canadian Canners Ltd. x | F 7,8; V 3,4,10 |
| 88 | Northport | Canadian Canners Ltd. x | V 7,10 |
| 89 | Norwich | Lyman, Geo.E. ★ | F 13 |
| 90 | Nottawa | Eureka Canning Co. Ltd. (H.O.Collingwood) | F 4, 7-9,11; V 3,10 |
| 91 | Oakville | Glassco Limited | F 14-16 |
| | | Jacobs, Geo.B. | F 14-16 |
| | | Raynor & Thorn ★ | |
| 92 | Orono | Canadian Canners Ltd. #251 x | F 1; V 6,7 |
| | | Canadian Canners Ltd. #542 x | F 13 |
| 93 | Ottawa | Bonnie Meg Co. ★ (267 Somerset W.) | |
| | | Marchessault, M. (183 Water) | V 3,10 |
| | | Routhier, Eugene (134 Nelson) | F 9,11; V 3,4,10 |
| 94 | Otterville | Tip Top Canners Ltd. (H.O.Greensville) | F 1,7; V 1,3,6-8,10 |
| 95 | Owen Sound | National Canned Meats Ltd. | V 14 |
| 96 | Peterboro | Canadian Packing Co. Ltd. (H.O.521 Front St.E. Toronto) | V 10 |
| 97 | Petrolia | Canadian Canners Ltd. x | V 6,7 |
| 98 | Picton | Benson Canning Company | V 10 |
| | | Canadian Canners Ltd. #14 x | V 7,10 |
| | | Canadian Canners Ltd. #15 x | F 9,11; V 10 |
| | | Canadian Canners Ltd. #41 x | F 1; V 6-8 |
| | | Canadian Canners Ltd. #107 x ★ | F 13 |
| | | Canadian Canners Ltd. #152 x | V 10 |
| | | Canadian Canners Ltd. #303 x ★ | |
| | | Folkard Canning Company | V 3,6,7,8,10 |
| | | Folkard & Hubbs | F 13 |
| | | Healy & Hart Evap. Company | F 13 |
| | | Kinney Canning Company | F 1,9,14; V 3,6,7,10 |
| | | Quinte Canning Company | V 10, squash |
| 99 | Plantagenet | Blondin, Philias | F 9; V 3,6 |
| | | Prevost, Fereol | F 1; V 3,6,8,10 |
| 100 | Port Burwell | Canadian Canners Ltd. x | V 10 |
| 101 | Port Dalhousie | Canadian Canners Ltd. #56 x | F 4,6-8; V 10,tomato pulp |
| | | Canadian Canners Ltd. #300 x | F 4,6,7; V 10 |
| 102 | Port Dover | Port Dover Canning Co.Ltd. (H.O.134 King St.E.Toronto) | F 1,4,7-9; V 3,6-8,10 |

| No. on Map. | Location. | Company<br>Ontario (cont'd). | Products |
|---|---|---|---|
| 103 | Port Hope | Canadian Canners Ltd. x | V 6,7,10 |
| 104 | Port Milford | Canadian Canners Ltd. x | V 6,7,10 |
| 105 | Port Rowan | Buck, J.F. | F 13 |
| 106 | Rednersville | Canadian Canners Ltd. x | V 10 |
| | | Phillips Co., The | F 13 |
| 107 | Ridgetown | Canadian Canners Ltd. x | V 7,10 |
| 108 | Russell | Belisle, Seraphim | F 1; V 3,6 |
| 109 | St.Catharines | Canadian Canners Ltd.#18 x | F 4,6-9; 11,pineapple, grape-fruit; V 1,3-5, 9,10,13 |
| | | Canadian Canners Ltd. #26 x | V 10 |
| | | Havens, Irvin, S. | V 10 |
| | | Lincoln Canning Company | F 9; V 1,3,4,10 |
| | | Wethey, J.H.,Ltd. | F 14-16,19 |
| 110 | St.Davids | Canadian Canners Ltd. x | F 4,6-11; V 1,3,4,9 |
| 111 | St.Marys | Clark, Frank | F 13 |
| 112 | St.Onge | Patenaude, Domina | V 3,6,10 |
| 113 | Salem | Canadian Canners Ltd. x | |
| 114 | Shannonville | Shannonville Canners Ltd. | V 10 |
| 115 | Simcoe | Canadian Canners Ltd. x | F 1,4,8,9,11; V 1-3, 6-8,10 |
| | | Lealand Company, Ltd. | V 13,14 |
| | | St.Williams Fruit Preserves Ltd. | F 14,15,16 |
| 116 | Smithfield | Corneil, J.H. | V 10 |
| | | Graham, R.J. | F 13 |
| | | Smithfield Packing Company | V 10 |
| 117 | South Bay | Lobb Evaporator Co. (H.O. Milford) | F 13,20 |
| 118 | Sparta | Bagnall, G.E. | F 13 |
| | | Mills, W.H. | F 13 |
| 119 | Stoney Point | Canadian Canners Ltd. x | V 10 |
| 120 | Strathroy | Canadian Canners Ltd. x | V 6,7 |
| 121 | Thamesville | Canadian Canners Ltd. x | V 6 |
| 122 | Thedford | Town & Cas | F 13 |
| 123 | Thornbury | Reid & Gower | F 13 |
| 124 | Tilbury | Canadian Canners Ltd. x | V 10 |
| 125 | Tillsonburg | Robinson, O.E. & Co. (H.O. Ingersoll) | F 13 |
| 126 | Toronto | Bowes Co.Ltd.(14 Orillia) | F 14,15,17,18 |
| | | (Crosse & Blackwell (Canada)<br>(Ltd. (Fleet & Bathurst)<br>(Keiller, Jas.& Son (Can.) Ltd.) | F 14; V 14 |
| | | Dalton Bros. (11 Front E.) | F 17 |
| | | Duthie Mfg.Co.(648 Dufferin) | F 17; V 13 |
| | | Hellmann,Richard,Ltd. (422 Wellington W.) | V 13,14 |
| | | Hunt Mfg.Co.(2382 Dundas St.W.) | F 14-16,19 (also raisin and cherry pie filler) |
| | | Low,Joe,Corporation (100 Sterling Road) | F 14,16 |
| | | National Canned Meats Ltd. (521 Front St.E.) | F 1; V 13,14 |
| | | Shirriffs Ltd.(Matilda St.) | F 14-17 |
| | | Smith, J.Hungerford Co. Ltd.(19 Terauley) | F 17 |
| | | United Drug Co.Ltd. (68 Broadview) | F 14,16 |

| No. on Map. | Location | Company<br>Ontario (cont'd). | Products |
|---|---|---|---|
| 127 | Trenton | Foley, F.B.(H.O.Belleville) | F 13,chops,waste |
| | | Spring Valley Canners Ltd. (H.O.159 Bay St. Toronto) | F 1; V 10 |
| 128 | Union | Doolittle,Geo. ☆ | F 13 |
| 129 | Vineland | Canadian Canners Ltd. x | V 10 |
| 130 | Vineland Stn. | Culverhouse Canning Co. (H.O.134 King E. Toronto) | F 4,6-9,11; V 1,4,5,9, 10,13, tomato purée |
| 131 | Warkworth | Whitcombe, F.C. | F 13 |
| 132 | Waterdown | Nicholson & Stettler,Ltd. | F 14-16,19 |
| 133 | Waterford | Canadian Canners Ltd. x | F 7,9,11; V 3-6,9 |
| 134 | Waupoos | Hughes, L. | F 13 |
| | | Waupoos Canning Co.(H.O. Picton) | V 6,7,10 |
| 135 | Wellington | Best Canning Company | V 3,6-8,10 |
| | | Canadian Canners Ltd. #28 x | V 10, tomato purée |
| | | Canadian Canners Ltd. #45 x | V 3,6-8 |
| | | Canadian Canners Ltd. #110 x ☆ | |
| | | Greer Bros. | V 10 |
| | | Shourds, L.K. | F 13 |
| 136 | West Lorne | Canadian Canners Ltd. x | V 6,7 |
| 137 | Winona | Smith, E.D. & Son,Ltd. | F 14-17,20,grape juice; V 13 |
| 138 | Woodstock | Robinson, O.E. & Co. ☆ (H.O.Ingersoll) | F 13 |
| 139 | Wooler | Mitchell, J.A. | F 13 |
| | | Quebec | |
| 1 | Aylmer East | Jeanne Canning Co. | F 14; V 3,6 |
| 2 | Boucherville | Lassonde, J.T. | V 3,10 |
| 3 | Dolbeau | Simard, Eugene | F 2 |
| | | Windsor, J.W. Ltd. (H.O.407 McGill,Montreal) | F 2 |
| 4 | Grand Bergeronne | Windsor, J.W., Ltd. (H.O.Montreal) | F 2 |
| 5 | Henryville | Henryville Canning Co. | V 3,6,10 |
| 6 | Hull | Stewart, W.H. ☆ | |
| 7 | L'Acadie | Granger, Eustache | V 3,7,10 |
| 8 | Lachine | Saxonia Fruit Pres.Co.Ltd. | F 4,18,citron |
| 9 | Laprairie | De Gruchy, T. & Fils | V 3,7,10 |
| 10 | Les Escoumains | Loggie, A. & R. Co. (H.O. Loggieville,N.B.) | F 2 |
| | | Loggie, W.S. Co. (H.O. Chatham, N.B.) | F 2 |
| 11 | Mille Vaches | Loggie,W.S.Co.(H.O.Chatham) | F 2 |
| | | Windsor, J.W. Ltd. (H.O.Montreal) | F 2 |
| 12 | Montreal | Cossette, J.R. (6252 St. André) | V 3,6,10 |
| | | Davidson,Alex.(4909 Sherbrooke W.) | F 14-16, lemon butter; V 13 |
| | | Desy, J.A. Ltd.(268 St.Paul East) | F 14 |
| | | Dominion Preserving Co.Ltd. (8445 St.Dominique) | F 14; V 13,14 |
| | | Eagles, J.T. (1098 Drummond) | F 14 |

| No. on Map. | Location | Company | Products |
|---|---|---|---|
| | | Quebec (cont'd). | |
| | Montreal (Cont'd) | Gamache, M. (7295 Chabot) | V 3,6,10,14 |
| | | Labrecque & Pellerin, (1081 St.Timothee) | F 1,6-9,11,17; V 13,14 |
| | | Lukes, Mrs.,Reg'd. (rear 823 Atwater) | F 15,16; V 14 |
| | | National Maple Butter Co.Ltd. (25 Laurier E.) | F 14 |
| | | Preston Pure Preserves Ltd. (4566 Delaroche) | F 14-17 |
| | | Raymond, Alphonse,Cie.#131 (1830 Panet) | F 14; 16; V 13,14 |
| | | Raymond,Alphonse,Cie.#149 | V 10 |
| 13 | Napierville | Napierville Canners Co.Ltd. | V 3-8 |
| | | Windsor Canning Co. (H.O. St.Johns) | V 6 |
| 14 | Neuville | Syndicate Co-op.de Neuville | V 3,6,10 |
| 15 | Notre Dame de Pierreville | La Cie Conserves Moderne | V 3,6,10 |
| 16 | Papineauville | Frappier, J.L. | V 6,10 |
| | | Gauthier, O.H. | V 3,10 |
| 17 | Quebec | Old City Mfg.Co.Ltd. | F 14-17; V 13 |
| | | Quebec Preserving Co. | F 14,15,16; V 13 |
| 18 | Roberval | Windsor, J.W., Ltd. (H.O.Montreal) | F 2 |
| 19 | St. Cesaire | Rouville Canners Ltd. | V 3,6,10 |
| 20 | St. Dorothee | Canadian Canners Ltd. x V | |
| 21 | St. Hyacinthe | Quebec Canners Corporation | V 3,6,10 |
| 22 | St. Isidore Laprairie | Canadian Canners Ltd. x | V 3,6,7,10 |
| 23 | St. Johns | Lord, David | V 3,6,7,10 |
| | | Windsor Canning Co. | F 1,6-8; V 3,6-8 |
| 24 | St.Madeleine | Plamondon, J.W.Fils | F 1,2,6,7,9,11,15,20; V 2,3,6,8,13,14 |
| 25 | St.Pierre les Becquets | Lemay & Frere | V 3,10,13 |
| 26 | St. Remi | Clark,Wm.Ltd.(H.O. 955 Amherst, Montreal) | V 2,13 |
| 27 | Valleyfield | De Bray, Henri | V 1,3,6,10 |
| | | Valleyfield Canning Co.,Ltd. | F 1,9,11,14-16; V 1-3 6-8,10 |
| 28 | Vercheres | Bouthillette, Clovis | V 3,6,10 |
| | | New Brunswick | |
| 1 | Chatham | Loggie,W.S. Co.,Ltd. | F 2 |
| 2 | Inkerman | Loggie, A. & R.,Co. (H.O.Loggieville) | F 2 |
| 3 | Loggieville | Loggie, A. & R.,Co. | F 2 |
| 4 | Richibucto | Loggie,A. & R. Co. (H.O.Loggieville) | F 2 |
| 5 | St.John | McCreadys Ltd. | V 14 |
| | | Wilson, Murray, Co.,Ltd. | F 14,17 |
| 6 | Tabucintac | Loggie, W.S. Co.,Ltd. (H.O. Chatham) | F 2 |
| 7 | Tracadie | Loggie, A. & R. Co. (H.O.Loggieville) | F 2 |
| | | Loggie, W.S. Co.,Ltd. (H.O.Chatham) | F 2 |

| No. on Map. | Location | Company | Products |
|---|---|---|---|
| | | **Nova Scotia** | |
| 1 | Amherst | Chappell & Sons | F 2; V 14 |
| 2 | Annapolis Royal | Fruit Products Ltd. | F 13 |
| 3 | Aylesford | Acadia Canners Ltd. (H.O.Wolfville) | F 1,13 |
| | | United Fruit Cos.of N.S. Ltd.(H.O.Kentville) | F 1,12,20 |
| 4 | Berwick | Western Canners (Maritime) Ltd. * | F 1 |
| 5 | Boudreauville | Landry, John A. | F 2 |
| 6 | Bridgetown | Annapolis Valley Cider Co. | F 20 |
| | | Graves, M.W. & Co. | F 13,20,apple waste, pomace |
| 7 | Cambridge Stn. | Cambridge Jam Factory | F 14 |
| | | Graves, M.W. & Co.,Ltd. (H.O.Bridgetown) | F 13, apple waste |
| 8 | Charlos Cove | Neville Canneries Ltd. (H.O.Halifax) | F 2 |
| 9 | Digby | Jack & Cardoza | F 14,15 |
| 10 | Kentville | Graham Co.,Ltd. * | F 13 |
| 11 | Kingston | Acadia Canners Ltd. (H.O.Wolfville) | F 13 |
| | | Kingston Evaporators Ltd. | F 13,apple chips & waste |
| 12 | Lakeville | Nova Scotia Canners Ltd. | F 13 |
| 13 | Lawrencetown | Graves, M.W.& Co.,Ltd. (H.O.Bridgetown) | F 13,apple waste |
| 14 | Livingston Cove | Lakevale Pkg.Co. * | F 2 |
| 15 | Meteghan | Comeau, Louis, H. | V 3 |
| 16 | Pictou | Logan & Roberts * | F 2; V 3,7 |
| 17 | Port Williams | Union Dehydration Co.,Ltd. (H.O.Greenwich) | F 12 |
| | | United Fruit Cos.of N.S. Ltd.(H.O.Kentville) | F 13 |
| 18 | Queensport | Matthews & Scott Company | F 2 |
| 19 | Sheffield Mills | Graves, M.W. & Co.,Ltd. (H.O.Bridgetown) | F 13,apple waste |
| 20 | Waterville | Provincial Canners,Ltd. (H.O.Halifax) | F 1,7,11; V 3 |
| 21 | Whitehead | Harris, W. & W.S. | F 2 |
| | | Neville Canneries Ltd. (H.O. Halifax) | F 2 |
| 22 | Wolfville | Wolfville Evaporator | F 13 |
| | | **Prince Edward Island** | |
| 1 | Charlottetown | Fraser, W.S. | F 2; V 2,3 |
| 2 | Mt. Stewart | Johnson Co., H.A. | F 2 |
| 3 | Murray River | Fraser, W.S. | F 2 |
| | | McSwain & Johnson | F 2 |



Department of the Interior

HON. THOMAS G. MURPHY, Minister W. W. CORY, Deputy Minister

# NATURAL RESOURCES & INDUSTRIAL MAP
OF THE
# CANNING, PRESERVING & DRYING INDUSTRY
(FRUITS AND VEGETABLES)

Scale of Miles
100 200

(In cooperation with The Department of Agriculture)

Preliminary Edition
1930

LEGEND

Present Agricultural Areas ...

Principal Favourable Fruit and V[illegible]

## PRINCIPAL FAVOURABLE AREAS

In the areas referred to below are given the kinds of fruits and vegetables which are or could be grown in commercial quantities for canning. These areas, as well as many parts of Saskatchewan and the Western Provinces generally, part of the Clay Belt in Northern Ontario, and the Lake St. John District in Quebec, are all favourable for the hardier vegetables such as asparagus, beets, cabbage, carrots, cauliflower, peas, rhubarb and spinach, unless the contrary is stated. Fruits now being grown in small quantities only have been placed within brackets.

No. of Area on Map

1 Blackberries, cranberries, loganberries, raspberries, strawberries, [apples, cherries, pears, plums]

1 (a) Beans, corn, cucumbers, onions, pumpkins, tomatoes, in addition to those in No. 1

2 Beans, corn, cucumbers, onions, pumpkins, tomatoes, not cabbage and cauliflower because of the heat, apples, apricots, cherries, peaches, pears, plums, cranberries, raspberries, strawberries

These irrigated districts are considered particularly favourable for the hardier vegetables because of immunity to crop loss in dry years.

Beans

5 Beans, onions, cranberries, [raspberries, strawberries

6 Beans, corn, cucumbers, onions, pumpkins, tomatoes, apples, cranberries, raspberries, strawberries [blackberries, grapes, plums, pears, sour cherries]

7 Beans, corn, cucumbers, onions, pumpkins, tomatoes, apples, blackberries, cherries, grapes, peaches, pears, plums, raspberries, strawberries

Beans, corn, cucumbers, onions, pumpkins, tomatoes, apples, cranberries [illegible]

9 Beans, corn, cucumbers, onions, pumpkins, tomatoes, cranberries, raspberries, strawberries, [apples]

10 Beans, corn, cucumbers, onions, pumpkins, tomatoes, cranberries, raspberries, strawberries

Beans, corn, cucumbers, onions, pumpkins, tomatoes, apples, cranberries [illegible]

Beans, cranberries, raspberries, strawberries

Beans, cranberries, raspberries, strawberries, [plums]

Wild blueberries only, except in Lake St. John district

Beans, corn, cucumbers, pumpkins, tomatoes, apples, cranberries, raspberries, strawberries

Beans, corn, cucumbers, onions, pumpkins, tomatoes, apples, blueberries, cranberries, raspberries, strawberries [plums, pears, cherries]

Beans, not carrots because of the carrot rust fly. Blueberries, cranberries [illegible]

Beans, not carrots and peas because of the carrot rust fly and pea moth. Blueberries, cranberries, raspberries, strawberries

3 1761 11467684 4